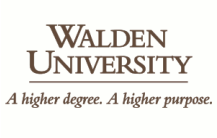

2015

Using Hand-Held Technologies To Support the Transition of Youth With Intellectual Disabilities Into Adult Roles

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This is to certify that the doctoral dissertation by

Janet Green

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Abstract

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MA, Minot State University, 2000

BS, Minot State University, 1999

Dissertation Submitted in Partial Fulfillment

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Abstract

People with intellectual disabilities (ID) struggle with social interactions that are vital to the development of a high quality of life. Although evidence exists to support the use of technology as cognitive aids for youth with ID, little exists on the use of common hand-held devices for social support. The use of such devices has the potential to level the playing field in adult social roles, helping people with ID make and keep relationships. It is unclear how applications like video chatting might be used to support transition-age youth with ID in adult social roles. Using a framework of modeling (i.e., social learning), generalization across settings (i.e., ecological systems), and self-determination, this single-case study was developed to learn the effect of direct instruction of youth with ID on initiation of and responses to others in adult social roles while using common hand-held devices. Three participants, selected from 9 youth participating in a structured social skills class, were taught to initiate interaction and respond to initiations made by others with modeled support in self-selected adult social settings. Visual analysis of graphed data showed generally increased initiations and responses. Percent of nonoverlapping data (PND) and percent of all nonoverlapping data (PAND) found varied effect size from one participant to the next. Quality of interactions had mixed results across participants. The results found these 3 transition-age youth with ID to be quite adept in their use of common hand-held devices, and they all used them successfully to access support. These findings suggest that the use of well known devices may increase the number of people who can provide social support, reduce the cost of devices and live supports, and reduce the of stigma of having a paid staff shadowing the individual.

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Dedication

For my husband, who has been supportive through the ups and downs of the doctoral process. For my children, who have noticed the absence of mom at times but have kept smiling anyway. For my parents, who emphasized the need to learn and make changes when changes are needed. For my sisters, who have encouraged my completion along the way. I never gave up, thanks to all of you.

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This process could not have reached its completion without the support and resources I found in many people. Dr. Suzette Zientara was a wonderful committee chair who helped me to take each step one at a time. Dr. Gerald Giraud provided statistical support for a new realm of research for me, the single-case design. Dr. Mary Solberg provided encouragement and guidance for the overall process in tough times. Family excused me from events with the understanding that I will return upon completion of my degree. Thank you all for the resources you have been and will be from this point forward.

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Chapter 1: Introduction to the Study

Background

Literature suggests that technology is available and is effective in supporting persons with intellectual disabilities (ID) in independent living, employment, and social interactions (Dicianno, Bellin, & Zabel, 2009; Dutta, Schiro-Giest, & Kundu, 2009; Freeland, Emerson, Curtis, & Fogarty, 2010; Hamm& Mirenda, 2006; Kelly & Smith, 2008; McDonnal & Crudden, 2009; McNamee, Walker, Cifu, & Wehman, 2009; Myers, 2007; Specht, Howell, & Young, 2007; Webb, Patterson, Syverud, & Seabrooks-Blackmore, 2008; Wehman, Gentry, West, & Arango-Lasprilla, 2009). Cooper, Balandid, and Trembath (2009) further identified the need for transition-age youth to have a large social network in order to avoid social loneliness that can lead to depression. The term transition-age youth refers to youth and young adults age 18-25 years. Unfortunately, transition-age youth with ID are often supported by paid individuals who tend to be from outside their peer groups (Giangreco, Smith, & Pinckney, 2006). Although examples of effective technology use have been documented (Dicianno, Bellin, & Zabel, 2009; Dutta, Schiro-Giest, & Kundu, 2009; Freeland, Emerson, Curtis, & Fogarty, 2010; Hamm& Mirenda, 2006; Kelly & Smith, 2008; McDonnal & Crudden, 2009; McNamee, Walker, Cifu, & Wehman, 2009; Myers, 2007; Specht, Howell, & Young, 2007; Webb, Patterson, Syverud, & Seabrooks-Blackmore, 2008; Wehman, Gentry, West, & Arango-Lasprilla, 2009), little has been documeted to support persons with ID in North Dakota.

Historical Context

Education integration and access by people with disabilities in the 1950s and 1960s led to social change at the national level. These movements sought integration alongside the better known Civil Rights movement of minority groups and the Architectural Barriers Act (1968) that required all constructions supported by federal money to be accessible (Ward, 1996). Increasing numbers of people with disabilities functioning within the general public forced policy makers to "consider strategies for managing the welfare of these individuals" (Ward, 1996, p. 5). The initial development of the Rehabilitation Act of 1973 was an example of this perspective. The Rehabilitation Act Amendments of 1986 further referred to supported employment for rehabilitation services. Such services allowed states to fund supported employment through state funds (Wehman, 2013). These amendments changed the social perspective of disability to one that reflects respect for a variety of human abilities and experiences as "part of, not outside of" a continuum of acceptable adult roles (Wehmeyer, 1996, p. 31). An additional amendment in 1992 put the focus on consumer choice when it came to choosing a career field and emphasized those jobs were to be competitive with employees without disabilities (Wehman, 2013).

There is dissonance between what is going on in schools and what business and society require of school exiters (Roberson, 2011). Practices within schools, stated Roberson, are becoming irrelevant and need to change to meet the demands of the outside world. The US Department of Education (1991) described the role of education as more than just living, "it is about making a life" (US DoE, 1991, p. 261). Brown-Glovers

(1992) stated the goal of education is to prepare youth to successfully function in their future environments. Still others (Powers et al., 1996) defined its goal as "promot[ing] self-sufficiency and competence" (Powers et al., 1996, p. 258); however, methods of teaching rely on directives provided by adults (Powers et al., 1996). More recently, Roberson (2011) defined the purpose of school as "to prepare students for the outside world" (p. 889). If these definitions are to be realized, education entities must evolve to meet the demands of society (Roberson, 2011). Self-sufficiency cannot be learned if youth never have the opportunity to practice skills without directives from these support staff. Serna (1996) identified a major challenge in education that involved engagement of both students and teachers in learning skills applicable to the future that facilitate turning over control of the students' lives to the students. In essence, self-determination skills must be taught to youth who will transition to acceptable adult social roles. A sense of independence must be valued by the individual in order for him or her to successfully create a quality of life reflective of individual preferences, skills, abilities, and challenges.

Transition to Adulthood

Transition to adulthood for youth with and without disabilities has been characterized as a turbulent time (Benninga & Quinn, 2011; King, Baldwin, Currie, & Evans, 2005; Kohler & Field, 2003; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006). Young adults need help to identify the self, resources available, the development of those resources and how resources relate to the self as an adult, and what he or she can offer to society (Beale-Spencer, 2011). Gonzales (2011) identified three phases of transition. The years 18-24 were termed "emerging adulthood," 25-29 years were called

"middle transition," and 30-34 were "late transition" (p. 604). Although a core set of curriculum standards has been a highlighted topic in education communities, Benninga and Quinn found no common determination of what schools teach and when they teach it.

In a study by Peraino (1992), acceptable and successful transition required the individual to be actively engaged in more than one activity; living interdependently with parents, relatives or peers; and paying at least part of the living expenses. An individual could be unemployed but must be meaningfully engaged in community-based activities. Roberson (2011) identified the critical skills of a 21st century workforce as having "critical thinking and problem solving" skills, "effective communication," ability to collaborate and work as a team, and creativity and innovation (p. 891). Benninga and Quinn (2011) added the need for literacy skills to make informed decisions, civic education which involves the "skills, knowledge, and attitudes" that get youth ready to be "competent, productive, responsible citizens" (p. 106), and character education. In addition, Gonzales (2011) recognized five markers of transition that included completing school, moving out of the family home, establishing employment, getting married, and becoming a parent.

Education must relate curriculum to real life outcomes and activities (Beale-Spencer, 2011; Benninga & Quinn, 2011; Davies, 2011; Gonzales, 2011; Roberson, 2011). It must include education in healthy living, drivers' education, citizenship including rights and responsibilities, how to access help when needed, and rules and guidelines for appropriate behaviors. Education as a whole must anticipate environments and activities in which youth will participate as adults and expose them to safe learning

as part of their educational experience prior to high school exit (Brown-Glover, 1992). Education and employment of youth with disabilities continues as a national priority (Wehman, 2013). The use of technology to promote learning for all youth, including those with disabilities, has great potential in leveling the playing field for all students who exit high school (Roberson, 2011). Beale-Spencer (2011) found that vulnerable individuals fall victim to negative stereotyping that "depicts them solely *as drains on societal resources and, in fact, unable and incapable of making civic contributions"* (Beale-Spencer, 2011, p. 65).

Unfortunately, special education outcomes have been found to be "limiting and limited" (Turnbull & Turnbull, 1992, p. xv). People with ID have poor postsecondary outcomes when compared to their same age peers without disabilities (Turnbull & Turnbull, 1992). In addition, individuals with ID access technology at a much lower rate than their peers without disabilities (Davies, Stock & Wehmeyer, 2003; 2004; Gentry, Kvarfordt, & Lynch, 2010; Palmer, Wehmeyer, Davies, & Stock, 2012; Parker & Banerjee, 2007; Specht, Howell, & Young, 2007; Stock, Davies, Wehmeyer, & Palmer, 2008). As several researchers (Davies, Stock & Wehmeyer, 2003; 2004; Stock, Davies, Davies, & Wehmeyer; 2006; Stock, Davies, Wehmeyer, & Palmer, 2008) have found, technology may be a successful cognitive aide if taught and used appropriately. However, little research has been conducted on the use of commonly available hand-held technology to support individuals with intellectual disabilities in increasing their independence in social, employment, and independent living environments. This study proposes to address this gap in research in an attempt to determine if such technology

with proper instruction and generalization may support individuals with intellectual disabilities in adult roles.

Problem Statement

Although hand-held technology is readily available for use by the general population, individuals with intellectual disabilities use it at a much lower rate than the general population (Davies, Stock & Wehmeyer, 2003; 2004; Gentry, Kvarfordt, & Lynch, 2010; Parker & Banerjee, 2007; Specht, Howell, & Young, 2007; Stock, Davies, Wehmeyer, & Palmer, 2008; Wehman, 2013; Wehman, Gentry, West, & Arango-Lasprilla, 2009). It is unclear whether this is due to financial constraints that limit purchase of such technology (Birenbaum, 2009; Braddock, 2007; Burke-Miller et al., 2010; Caldwell, 2010) or if the tools themselves are inefficient at supporting people with intellectual disabilities (Davies, Stock & Wehmeyer, 2003; 2004; Gentry, Kvarfordt, & Lynch, 2010; Palmer et al., 2012; Specht, Howell, & Young, 2007; Stock, Davies, Wehmeyer, & Palmer, 2008; Wehman, 2013). The use ot technology to support individuals with ID has been documented; however, these studies tended to address expensive devices or devices with significant modifications that make them very different from the technology used by others in the community (Davies, Stock & Wehmeyer, 2003; 2004; Gentry, Kvarfordt, & Lynch, 2010; Parker & Banerjee, 2007; Specht, Howell, & Young, 2007; Stock, Davies, Wehmeyer, & Palmer, 2008; Wehman, 2013; Wehman, Gentry, West, & Arango-Lasprilla, 2009).

It is common for individuals with intellectual disabilities to have support provided by a person in the form of a paraeducator while in school or a direct service provider as

an adult (Giangreco, Smith, & Pinckney, 2006). The presence of an additional person may create the perception that the individual is different when the support person plays a paid support role for the individual. Video chatting is a commonly used application provided by cellular phone companies (e.g., Facetime by Apple, 2013) and Internet providers (e.g., Skype by Microsoft, 2013; oovoo, 2013). These applications provide face-to-face opportunities for communication while the two individuals are in different locations. For this study, the independent variable was the use of video chatting with a support person. The dependent variable was the initiation and responses to initiations in adult social roles including work, daily living, and social environments.

Purpose of the Study

Research is needed to determine the potential impact of using general consumer hand-held technologies (i.e., cell phones, tablets, personal digital assistants, iPods/iPads) to support social integration of people with ID in employment and social settings. The purpose of this study was to determine the effectiveness of using video chat applications on common hand-held devices to support social interactions within adult environments including work, daily living, and social settings. Results of this study adds to the literature base that discusses efficacy, ethics, and value of using common hand-held devices to support independence and social interactions of transition-age youth with ID. Such discussion adds to the literature related to using applications and devices that are available and used by the general population to support interactions initiated by and to which the individual with intellectual disability responded.

Nature of the Study

This quantitative study intended to determine the effectiveness of using video chatting between individuals with ID and support persons without disabilies on common hand-held technologies to support independence for youth with ID in the transition from high school into adult roles. This study addressed two distinct variables. The dependent variable was the initiation of interaction and response to initiations by peers (e.g., coworkers, same-age peers) in adult social roles. Literature suggested that social skills were the strongest deterrant to full integration into employment and social adult roles (Davies, Stock, & Wehmeyer, 2003; Halpern, Close, & Nelson, 1986; Knoff, 2003; Peraino, 1992; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006; Wehman, 2013). The independent variable was the use a video chat application on an iPad mini, through which the social skill of initiation of interaction and response to initiations by others was taught and supported in natural environments. Through the use of video chatting with a trained adult support provider, support was provided to the individual with intellectual disability from a distance, thus reducing the potential perception of dependence of adult support required (Giangreco, Smith, & Pinckney, 2006).

By using a single-case, multiple-baseline design (Creswell, 2009; Kazdin, 1982; O'Neil, McDonnell, Billingsley, & Jenson, 2011), use of video chatting with a trained support provider to support the integration of the participant into adult social roles was studied. Multiple participants provided control for comparison of baseline and intervention data on initiation of interactions and response to initiations made by others (e.g., same age peers, coworkers) in adult social roles.

While other study designs were considered, the single-case, multiple-baseline design was chosen due to the intimate nature of the intervention. The ABA model was considered for this study but removal of the treatment will not allow for unlearning of skills taught. An ABAB model, then, was considered. While this model would show validity in the treatment attempt, unlearning skills would also be an issue. Multiple participants were selected and then limited to three participants. Cost and time were the main reasons. This study began baseline data collection at the start and continued data collection through all intervention phases for each participant over the course of 6 weeks.

Therefore, a single-case, multiple-baseline design was selected. Treatment was not be removed. The implementation of the treatment at staggered starting points for each participant was anticipated to establish the validity of the treatment while maintaining the use of skills taught. However, due to timing issues and individual participant needs and skills, all participants received treatment at the same time. Efficacy was established with each participant. Using a multiple baseline design avoided the reversibility issue noted for single-subject design. However, target behaviors must be independent of each other in order to contribute change to the intervention. If the target behaviors were interrelated, a change in one setting, behavior, or subject may have occurred even without the treatment. For example, if a participant saw the results of another participant using hand-held technologies in social contexts, the participant may have learned by observation and taken the initiative to use similar strategies without the treatment actually being implemented. This change in behavior may not be due to the treatment; rather, the change should be contributed to social learning.

Research Question and Hypotheses

The research question in the study asked how video chatting on common hand-held devices supported the social/interpersonal skills of transition-age youth with intellectual disabilities at work and social settings. The hypotheses for the study were as follows:

$H1_0$: Use of video chatting on a common hand-held device will have no impact on frequency of initiation of interactions in adult social roles of youth with ID as measured by direct observation of transition-age youth with developmental disabilities in these settings.

$H1_1$: Use of video chatting on a common hand-held device will increase the frequency of initiation of interactions in adult social roles of youth with ID as measured by the direct observation of transition-age youth with ID in these settings.

$H2_0$: Use of video chatting on a common hand-held device will have no impact on proficiency of acceptable social interactions as measured by direct observations in natural environments.

$H2_1$: Use of video chatting on a common hand-held device will increase the proficiency of acceptable social interactions as measured by direct observations in natural environments.

This quantitative study used a single-case, multiple-base-line design with three participants and their trusted support person when appropriate. Dependent variables were numbers of initiations by the participant or responses to initiations made by peers and proficiency of use of appropriate social interactions with distance support using video

chat. Baseline data was collected on initiation of social interactions in the environment identified by each participant following recruitment and consent to participate in which the participants interact including employment, social activities, and independent living environments. Since these were natural environments in which the participants exists, specific environments were determined in collaboration with the participants and his or her support person, possibly a guardian.

The independent variable (treatment) was use of live support by a trained adult support person using a video chat applicaton (i.e., video chat). Once a baseline trend was established in one setting with no technology in use, the intervention began, involving learning how to use video chatting on an iPad mini or other hand-held device. Training was implemented by a local counselor who regularly conducted social skills instruction with young adults with intellectual disabilities. It was recommended that intervention training involve four 30 minute learning sessions in a two week time period in which the participants became familiar with video chatting with the trained support person using iPad minis or their personal hand-held devices. The learning sessions followed a social skills curriculum developed by the counselor and implemented regularly with her clients. In addition, the learning session taught specific appropriate ways to initiate interaction with others and appropriate responses to initiations by others in work, daily living, and social activities. Finally, instruction taught the use of technology in the form of hand-held technologies using distance support of video chatting and social modeling (e.g., a video loaded onto the device used to self-prompt appropriate interactions). Following the two weeks of learning sessions, data collection was repeated at the identified environment.

The researcher met the participant at the determined setting in which adult social interactions were required and confirmed that the hand-held device was present at no additional cost to either the participant or his or her support personnel. Participants were allowed to use the device they currently owned rather than replacing the device with one that was not familiar to him/her. The researcher provided a verbal prompt that suggests the participant could use video chatting or modeling if needed. No other cuing was provided. Data was collected to compare to the baseline data to determine an effect. Although it was anticipated that a staggered start would be used, due to timing and individual participant skills and needs, the data collection occurred within the same timeline for all participants. After trends had been established using the intervention, data collection was finalized. Figure 1 shows the implementation schedule.

Population and Sampling Strategy

The participants in the study were three transition-age youths (ages18-35 years; Gonzales, 2011) with an intellectual disability who had not used hand-held technology for social, communication, or cognitive support related to the dependent variable define prior to baseline observation. The participants were recruited from the population of transition-age youth and young adults with an intellectual disability in a specific geographic region in a rural state. Participant selection involved recruitment through age-appropriate social organizations for youth with ID, which led to direct contact with a social skills instruction group provided by a social worker. An informational flyer was circulated through the social organizations providing a brief description of the study and contact information of the researcher (see Appendix A). See Figure 1 for the timeline.

	Recruit	Select participant	Inform applicants of selection	Obtain informed consent	Identify settings	Collect data B=baseline; I=intervention LS=Learning Session			Debrief
						Participant 1	Participant 2	Participant 3	
Wk 1	x	x	x	x	x				
Wk 2						B	B	B	
Wk 3						LS	LS	LS	
Wk 4						I	I	I	
Wk 5						I	I	I	
Wk 6						I	I	I	
Wk 7									x

*Figure 1.*Timeline showing anticipated implementation schedule.

Statistical analysis involved visual analysis documenting the baseline behavior of initiation of and response to interactions with peers provided the simplest manner in which to determine the impact of the intervention. A tick system was implemented on the data collection form found in Appendix B. The researcher wrote a hash mark for how many opportunities for demonstrating the initiations were available in the appropriate place on the data collection form and how many actual demonstrations of the initiations were made by the participant in the appropriate place on the data collection form. In addition, opportunities for demonstrating responses to initiations by peers and actual responses made by the participant were marked on the data collection form in the appropriate space. These ticks were then be plotted on a line graph. The visual analysis summarized the information generated by placing the data on the line graph in relation to the research questions. Statistical analysis such as a regression analysis helped to

determine the effect of the treatment intervention (i.e., instruction and use of video chat on an iPad mini or other hand-held device with support). Slope regression analysis provided greater support for the effect of the study. Percent of non-overlapping data (PND) and percent of all non-overlapping data was also calculated to determine the effect of the intervention.

Conceptual Framework

The theoretical foundation for this study revolved around an intertwining of several theories. Influences and generalizations from one setting to another as discussed in Bronfenbrenner's (1979) ecological systems theory and social modeling of developmental skills of Bandura (1977) provided the foundational discussion of learning and human development. The ecological perspective supports a reciprocal relationship between the person and the environment, each influencing the other. Personal experiences, then, influence perceptions of identity within American society (Beale-Spencer, 2011). Self-determination proposed by Wehmeyer (1996; 2003; 2007) and quality of life as proposed by Halpern (1986; 1987) focused the discussion of transition from high school into adult roles for youth with ID. Finally, commonly available hand-held technology was introduced as a potential tool to support transition by increasing independence and enhancing social interactions with peers.

Current Research

Research has indicated an interest in the use of assistive technology to support transition from high school into adult roles for youth with ID (Gentry, Kvarfordt, & Lynch, 2010; Parker & Banerjee, 2007; Specht, Howell, & Young, 2007). Transition

teachers are key in determining evidence-based practices that address self-determination, social skills, academic preparation, accommodations, and assistive technology needs and strategies to support youth in applying learning beyond the classroom (Webb, Patterson, Syverud, & Seabrooks-Blackmore, 2008).

While technology has proven itself vital to participation in academic, social, and employment for young adults (Gentry, Kvarfordt, & Lynch, 2010; Parker & Banerjee, 2007), youth with ID demonstrate limited experiences and fluency of technology use (Kelly & Smith, 2008; Parker & Banerjee, 2007). Rather than using technology to support independence and social interactions, schools employ paraeducators for such tasks (Giangreco, Smith, & Pinckney, 2006). Gentry, Kvarfordt, and Lynch (2010) found that the use of hand-held technology was effective in supporting youth with autism in adult roles; however, little research exists that documents its effectiveness in supporting youth with ID.

Theories

Social learning theory (Bandura, 1977) suggests that individuals learn by watching others. They learn by watching the antecedent to behavior, the behavior itself, and the consequence resulting from the behavior. Social learning provides shortened timeframes for individuals to learn new skills. Once a skill has been demonstrated by another, the time it takes for the learner to acquire the skill and put it into his or her permanent store of strategies or skills is greatly decreased. This was the foundation of the use of social learning in this study and provides the background for the use of video chatting with a support person.

Additionally, the environments in which one exists influence the learner and are influenced by that individual. This was the ecological systems theory as proposed by Bronfenbrenner (1979). The influence of learned behaviors in one environment carryover into another environment and receive influence in those environments. The value placed on behaviors by others within multiple environments impacts the value the learner has on the behaviors and thus contribute to demonstration of such behaviors. Although the learner may have learned skills socially as in social learning, the value and influence of multiple environments at the micro-, meso-, exo-, and macro-system levels help to solidify the need for the skills and the value placed on them by the learner. These systemic levels supported the multiple settings found within the single-case multiple baseline aspect of the study.

Self-determination (Wehmeyer, 1996; 2003; 2007) represents the implementation of learned skills to reach the goals the individual has for him or herself. Individuals with intellectual disabilities tend to struggle with determining their own future (Halpern, 1986; 1987). Being in control of one's own destiny was suggested by Bandura's (1977) social learning theory. Reciprocal learning suggests that the learner is changed by the stimulus within one setting and changes the stimulus by acting on it as well. Bronfenbrenner (1979) also aluded to this concept. Halpern suggested it as a need for the development of a quality of life and Wehmeyer's work led to the need for the individual to determine a quality of life that he or she wants for him/herself.

Each of these theories interacts in the world surrounding the learner. Technology can support the learning of socially appropriate adult social roles. The advances that

allow individuals to interact face-to-face while being in different places provide a unique manner in which social learning can happen without the perception of dependence on paid support persuading peers and co-workers that an individual is of less value than any other. Stimulus in multiple enviornments may be perceived as being different and requiring different actions. Use of an application such as video chatting further has the potential to support a learner from one environment to the next where without this support a learner may need to start all over again.

With this as the backdrop, this paper considered the critical time when youth transition from high school to socially acceptable adult roles and incorporated the development of self-determination and the role of social learning. Specifically, the definition of transition and characteristics of this crucial time in a youth's life were described. Socially acceptable adult roles in the United States are defined in terms of all youth as well as the role of the school in creating civically engaged adults. Finally, the use of technology in reducing dependency and stigma associated intellectual disabilities is discussed as a potential means of supporting individuals in participating interdependently in living, learning, and working within their home communities as productive neighbors, friends, and co-workers. See Table 2 for a visual representation of the framework for this quantitative study. Due to time and resource restrictions, only the short term outcomes/impact were addressed by this study.

Construct Definition

The current study proposed to study the impact of teaching appropriate ways to initiate and respond to social exchanges with peers in natural adult social roles such as

Table 1.

Logic Model

Inputs	**Outputs**		**Outcomes-Impact**		
	Activities	Participation	Short	Medium	Long
LSW staff time iPad mini or iPod touch (as preferred by youth with ID and support person)	Teach (LSW/PhD counselor) • Appropriate initiation of interaction • Appropriate response to interaction initiated by peer • Use of video chat • Disseminate iPad mini/ iPod touch to participants and support personnel at no additional cost to them	Increase quantity and quality of initiations Increase quantity and quantity of responses to interactions by peers	Improved skills in social communication	Repeated inclusion in socialization	Adult social role inte-gration

employment, social, and independent living activities with real time support provided by a trained adult via video chat with a tablet or other hand-held device. Participants demonstrated appropriate exchanges as defined by the social context in which the interaction took place and as deemed appropriate by adults within the natural context. Definitions of appropriate exchanges were developed in collaboration with supervisors, peers, and customers in natural environments. A Logic Model (Table 1) is found below.

Dependent variable: The dependent variable in this study was the initiation of and response to interactions with peers in adult social settings including employment, social, and independent living settings. This variable stems from Bandura's (1977) social learning theory that suggests learning by watching another complete a task or demonstrate a skill reduces the number of trials and the length of time necessary to fully acquire the skill.

Additionally, Bronfenbrenner's (1979) ecological systems theory posited that such learning can be generalized from one setting to the next and involves the value placed on the skill or activity as determined by those that influence the environment or ecological setting in which the interaction takes place. The transfer of skills from one setting to the next requires the value to be established within the context of the environment (Bronfenbrenner, 1979). The ecological systems theory informed the use of social skills learning, specifically initiation of and response to interactions with peers and co-workers in multiple environments.

Independent variable (IV): The use of video chatting or video modeling on an iPad mini or other preferred hand-held device with support from a trained adult was the

variable that was manipulated. Participants were taught by their social skills instructor to use the application on a hand-held device with real time support provided by a trained adult, used it in adult social roles including employment, social, and independent living settings. Use of video chatting or modeling allowed for social learning (Bandura, 1977) in real time and from a trusted support person while eliminating the direct presence of the support person at all times. The generalization of the intervention into multiple environments followed the ecological systems theory (Bronfenbrenner, 1979) and showcased the value placed on the behavior from multiple contexts. The participant identification of the appropriate context in which to demonstrate the skill reflected the need for self-determination (Field & Hoffman, 1994; Wehmeyer, 2003) by requiring the youth to know his or her own strengths and needs while advocating for supports and preferences.

Intellectual disability: The Council for Exceptional Children, a professional group that advocates for appropriate legislation and education for individuals with disabilities in the United States, defined an intellectual disability as "significantly sub-average general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child's educational performance." (CEC, 2013, para. 7). Intelligence considers an individual's mental capacity and includes memory, thinking, and reasoning (AAIDD, 2012). Adaptive behavior encompasses an individual's conceptual, social, and practical skills (AAIDD, 2012). These include self direction, money, time telling and management, social problem solving, self esteem, gullibility, ability to follow rules and laws, ability to be taken

advantage of, daily living skills, employment skills, and interactions with others in multiple environments and contexts (AAIDD, 2012). Diagnosis of an intellectual disability has three parts including an intelligence quotient at approximately 70 or below; deficits in adaptive behavior; and onset before age 18 (CEC, 2011). Generally, individuals with intellectual disabilities struggle with learning and with memory, attention, or language skills (CEC, 2011).

Self-determination: As defined by Field & Hoffman (1994), self-determination was defining and reaching goals that reflect a "foundation of knowing and valuing oneself" (p. 164). Self-determination will be used to define the environments in which the study will take place.

Assumptions, Limitations, Scope, and Delimitations

Assumptions

This quantitative study made several assumptions. First, the sampling procedure assumed that the participant was representative of the make-up of the surrounding community. Recent population influx in the region of the state selected may have impact the generalizability of the results because data on current make-up was not readily available. Census recording is delayed; therefore, representation in the community may not have been accurate.

The framework of the study included multiple theories. First, social learning theory suggested individuals learn by watching behaviors and consequences for behaviors. With the availablility and use of hand-held technology, social learning by watching family members, peers, co-workers, and support individuals may have

influenced learning that was caused directly by participation in this study. Next, the ecological systems theory suggested that each environment may stimulate different actions based on the individual's interrelated network of environments including micro-, meso-, exo-, and macrosystem levels. Each environment must be considered when manipulating any part of the stimulation found within it. In this study, video chatting on an iPad or other hand-held device may have impact production of the initiation of and response to interaction by peers dependent upon the relationship the individual had with others and with the environments.

The nature of the study assumed that technology was available readily although this population does not access and use technology at the same rate as peers without disabilities. The technology and application to be used in this study were funded through the study. Access to the technology was assumed to be unique due to participation in the study although the participant may have had access to similar technology and applications in prior experiences.

Limitations

The following limitations existed in this quantitative study. The study included transition-age youth with intellectual disabilities who have not used an iPad mini or hand-held devices along with video chat to support social interactions at work, home, school, or in the environment. Such technology is readily available and it is possible that participants had exposure to these tools even though they are not actively using them. In addition, participants from more affluent families may have had greater access to such forms of technology. It is possible that individuals who do not currently use such

technology also come from lower income homes; therefore, generalization of results may be limited.

The use of single-case multiple baseline design limits the generalizability of results. Care should be taken when interpreting outcomes of this study when applying the treatment to others. In addition, failure of the participants to revert back to baseline levels of the target behavior may have been due to observation of others and not necessarily from the treatment (Johnson & Christensen, 2008).

Single-case multiple baseline design further is limited by the length of time the treatment is implemented. If the treatment phase lasts too long, the treatment could result in a generalization. In other words, the individuals may over learn the skill taught and transfer those skills permanently (Johnson & Christensen, 2008). Single-case multiple baseline design further demonstrates an inability to totally eliminate rival hypotheses.

Scope

The scope of this study included transition-age youth with intellectual disabilities who, at the start of the study, were not using video chat to support successful social interactions in natural settings. This included the use of portable technology to aid cognition, communication, and learning. Nearly all youth in the region from which the participants were chosen use computers, tablets, and iPads within their school environment specific to course content. This was why the proposed study focuses on adult social roles. Generalization from school-based learning to community-based interactions may influence the acquisition of skills. Data may in fact show carry-over between the two environments. However, difficulty with generalization of skills from

one setting to the next is a characteristic of individuals with ID, making it unlikely that the participants generalized learning in this study. In this single-case multiple baseline design , the results can only be interpreted in relation to the identified participants.

Delimitations exist with this study as well. As noted above, this study did not include transition-age youth with intellectual disabilities currently using hand-held technologies as social support. The results of this study are only generalizable to the study's participants. Care should be taken when generalizing the results to others. In addition, more affluent families may have different access and experience with technology so results may not generalize successfully to individuals with such resources.

Significance of the Study

Little research exists on the use of common hand-held technologies. Some research exists on specialized instruments but many modifications and/or expenses are needed when adapted (Davies, Stock & Wehmeyer, 2003; 2004; Stock, Davies, Davies, & Wehmeyer; 2006; Stock, Davies, Wehmeyer, & Palmer, 2008). The following section describes the theories briefly described above including social learning theory (Bandura, 1977); self-determination (Wehmeyer, 1996; 2003; 2007) ecological systems theory (Bronfenbrenner, 1979) and quality of life of individuals with intellectual disabilities (Halpern, 1986; 1987) that provide the boundaries for the proposed study.

Social learning theory (Bandura, 1977) suggests that individuals learn by watching others. The time it takes for the learner to acquire the skill is greatly decreased. Reciprocal actions further provide the foundation of social learning in that the learner responds to a stimulus, the environment therefore changes, and the learner has to respond

to the new environment. This was the foundation of the use of social learning in this study and provided the background for the use of video chatting with a support person.

Self-determination (Wehmeyer, 1996; 2003; 2007) represents the implementation of learned skills to reach the goals the individual has for him or herself. Individuals with intellectual disabilities tend to struggle with determining their own future (Halpern, 1986; 1987). Being in control of one's own destiny was suggested by Bandura's (1977) social learning theory. Reciprocal learning suggests that the learner is changed by th stimulus within one setting and changes the stimulus by acting on it as well. Bronfenbrenner (1979) also aluded to this concept. Halpern suggested it as a need for the development of a quality of life and Wehmeyer's work led to the need for the individual to determine a quality of life that he or she wants for him/herself.

Each of these theories interacts in the world surrounding the learner. Technology can support the learning of socially appropriate adult social roles. The advances that allow individuals to interact face-to-face while being in different places provide a unique manner in which social learning can happen without the perception of dependence on paid support persuading peers and co-workers that an individual is of less value than any other. Stimulus in multiple enviornments may be perceived as being different and requiring different actions. Use of an application such as video chatting further has the potential to support a learner from one environment to the next where without this support a learner may need to start all over again.

This study added to the literature base on the efficacy of using common hand-held technologies in conjunction with video chat to support appropriate social interactions of

individuals with intellectual disabilities in living, learning, and working environments. In addition, technology for communication has been studied extensively; little research exists on the use of technology as cognitive aids in the work place for individuals with intellectual disabilities.

This study has the potential to add another layer of research on employment of individuals with ID; specifically related to using common hand-held technologies rather than specialized technologies. The impact on socialization has great potential though little work was found to support this angle of research.

The results of this study may be used to increase the arguments for the normalization of the use of commonly available technologies to meet the needs of a vulnerable population. Cost efficiency may be a strand of research that follows this study. Additionally, benefits of using technology may be expanded into general education topics and methods that support the learning and interaction of students with intellectual disabilities in less restrictive environments with their peers without disabilities.

The field of education may also benefit from this study by increasing the soft skills of students with disabilities through social learning and modeling by peers without disabilities. Resources might be shared for the development of educational opportunities for all students, including those with disabilities if the results indicate a cost effective method of supporting youth with ID. The potential exists that supports may be faded from direct adult provider support to using natural and existing supports available to all. The stigma associated with having a shadow person (i.e., job coach, paraeducator, teacher's aid, direct support staff) providing assistance in multiple environments. In

addition, acceptance by peers may increase if adults who may be perceived as behavior monitors can increase the distance between the supportive adult and the individual with a disability. Interest in an individual's technology and the way it's used is also a way of normalizing the support provided.

This study has the potential to contribute a small piece of information that may be a catalyst for change in the role of direct support staff and paraeducators who support individuals with intellectual disabilities to be minimally supervised within the community. Through advancing the use of commonly available hand-held technology, costs may be redirected to purchase and teach individuals how to use such technology, thus changing the role of supervisory staff. Consideration of use of commonly available technology may also lead to reduction of dependence on support people while maintaining the level of support. Increased independence levels may also reduce the stigma associated with people with intellectual disabilities by fading the need for support within close proximity in living, learning, and working environments.

Summary

Evidence exists in the literature of effective technology use supporting individuals with intellectual disabilities to participate in social, educational, and employment environments with success. Little research exists on the efficacy of using commonly available hand-held technology in this role. Transition from high school into adult roles is difficult for all youth and can be especially difficult for youth with ID. Finally, businesses want employees who are able to use technology in the work environment. Chapter 2 discusses the conceptual framework in greater detail and outline the potential

for social learning to assist individuals within natural environments to support youth in these new adult roles. The methodology is defined in Chapter 3 with results presented in Chapter 4. Chapter 5 discusses the implications of the results of this study and their potential social change.

Chapter 2: Review of the Literature

Introduction

Although technology exists that has the potential to support increasing independence of youth with ID (Dicianno, Bellin, & Zabel, 2009; Dutta, Schiro-Giest, & Kundu, 2009; Freeland, Emerson, Curtis, & Fogarty, 2010; Hamm& Mirenda, 2006; Kelly & Smith, 2008; McDonnal & Crudden, 2009; McNamee, Walker, Cifu, & Wehman, 2009; Myers, 2007; Specht, Howell, & Young, 2007; Webb, Patterson, Syverud, & Seabrooks-Blackmore, 2008; Wehman, Gentry, West, & Arango-Lasprilla, 2009), little research exists on the use of commonly available hand-held technology for this purpose. This chapter considers the time period when students transition from high school into adult roles, defines the purpose of education as it relates to post high school employment and life, and considers the interaction of multiple frameworks of learning. The current study explored the impact of using commonly available hand-held technology to support the social interaction of youh with intellectual disabilities in the transition from high school into adult roles.

A literature search was conducted using the Academic Search Primer to identify the purpose of education as it related to adulthood to set the stage for the transition from high school for all youth. In addition, research was sought on the use of technology with students with intellectual disabilities and encompassed the most recent 5 years. Transition of general education students was searched as was special education laws related to transition. Business perspective was considered in identifying post high school

needs. Finally, a search was conducted for each theory that was used to frame the study. These included social learning, ecological systems, and self-determination theories.

Historical Context

The well-known education theorist John Dewey described the role of education in the early 20th century, and much of that description is valid today. Dewey (1915) described education as all encompassing. Education provided operatives in which individuals learned to be a part of the whole. Their participation as a part of the whole was essential for completion of a task. Dewey described the industrial process of the 1800s in which all family members participated in the production of materials for immediate use by the family, and, if enough was available, for sale to neighbors or as trade items. Each individual in the household, no matter the age, learned to gradually accomplish all things in the home. Without this level of participation, the functionality of the home was in danger. In fact, there was a need for all individuals to contribute to the functioning of the home and community.

The operatives that Dewey (1915) described allowed for immediate generalization of learned skills. Students applied what they learned immediately at home or within the community. This application provided extra practice and gave meaning to the skill, making correct implementation of the skill motivating. The immediacy of the activities and the practical application made learners pay attention to details and become intimately familiar with the implementation of newly learned skills.

Dewey (1915) emphasized the idea that concepts need to have meaning in order to be more effectively learned. Education tended to introduce "so-called manual training,

shopwork, and the household arts-sewing and cooking" (p. 9) in order to provide experiential learning that is not addressed in other ways. These experiences created by the school were often, in Dewey's terms, "so weak that the work [was] often done in a half-hearted, confused, and unrelated way" (p. 10). Dewey said that educators "must conceive of work in wood and metal, of weaving, sewing and cooking, as methods of living and learning, not as distinct studies" (p. 11). Educators needed to use real life experiences as teaching opportunities in order to enhance retention and generalization of skills from the silos of the subjects taught within the classroom into other classrooms and beyond the walls of the schools into home and community life. More recent theorists agreed with Dewey, stating that youth needed to see value in what they were doing in order to continue doing it (Deci, Vallerand, Pelletier, & Ryan, 1991; Serna, 1996; Roberson, 2011; Wehmeyer, 1996).

However, there is a gap between the technological skill expectations of the world outside the classroom and the manner in which teaching occurs. Roberson (2011) identified this gap, suggesting that schools continue to focus on teacher-directed activities, fact based learning, and low level technological tools. Roberson further stated that education continues to resist the changes required outside the school doors, thus creating tension between schools and the outside world in which students will be required to participate after high school. In fact, Roberson said that education centers that ignore the demands outside the school doors are "retreating into irrelevance" (p. 86). As noted in Chapter 1, youth with disabilities, then, fall even farther behind their same age peers

by not using technology that can level the playing field (Kelly & Smith, 2008; Parker & Banerjee, 2007; Wehman, 2013).

Dewey (1902) took the time to look at the interaction between the child and the curriculum. This interaction was important to teachers in that teachers needed to not only teach the facts but also teach to the level of the child. Dewey said that curriculum materials were important to education in that they provided a map for teachers to use in getting children from their current point in knowledge to the point in which they were able to apply the knowledge they have acquired. He suggested that experience creates leverage. That which children do or experience is not the end or the achievement; rather it provides for "propulsion toward …a higher level" (Dewey, 1902, p. 15). Experience is needed to propel the individual to the next step and serves as the foundation for what is next to be taught.

Roberson (2011) concurred with Dewey's (1902) line of thinking. The framework upon which a core curriculum should be based, posited Roberson, should include global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; and environmental literacy. These skills must be taught during the individual's time in school (Roberson, 2011) and not passed on as an expectation of the individual as an adult with no preparation.

Dewey (1902) also discussed the relationship between child and curriculum in terms of interaction. He suggested that learning could not take place unless facts were presented, the environment was established, and children were guided by the teacher to experience. Learning was then constructed by the child with the guidance of the teacher.

In addition, learning that included creativity and innovation, critical thinking and problem solving, communication, and collaboration (Roberson, 2011) that are guided by the teacher and applied to the natural setting as soon and as much as possible create the ideal learning environment.

Dewey (1902, 1915) was a forward thinker for his time. Even today, the educational context he described that emphasized immediate application of newly learned concepts into real settings and events is necessary for children and youth to solidify the concepts taught while giving them meaning to the individual. While Dewey's discussion was intended for the education all students, it has implications for the education of youth with intellectual disabilities. Dewey did not separate education for all from education for children and youth with disabilities. It is this basic concept, *all means all*, that is woven through the following chapters to create the structure upon which youth with intellectual disabilities can learn to practice self-determined actions that result in the outcomes they want.

While Dewey (1902; 1915) laid the foundation of our current conceptualization of education, others have also defined the purpose of education. The purpose of school, stated Roberson (2011), was "to prepare students for the outside world" (p. 889). High school exiters must retain knowledge, understand that knowledge, and actively use it in the adult world. Literacy skills are needed to make informed decisions. According to Wehmeyer (1996), the goal of education was self-determination. Powers et al. (1996) proposed that the goal of education was to "promote self-sufficiency and competence" (p. 258). Peraino (1992) stated that the purpose of education was to "maximize opportunities

for employment and community integration" (p. 22). Although researchers have identified common language and components of effective education, little agreement exists as to when and how a common core curriculum might be implemented (Roberson, 2011).

Transition From High School

All youth who exit high school transition into adult roles. Gonzales (2011) discussed the transition concept of the 1950s that included adolescence (12-17 years) and young adulthood (18-35 years). Although he concurred with the age range (i.e., 12-35 years), Gonzales broke the stages of transition into the following: emerging transition (12-17 years), early transition (18-24 years), middle transition (25-29 years), and late transition (30-34). Markers of transition included completing school, moving out of the family home, establishing employment, getting married, and becoming a parent (Gonzales, 2011). Critical skills necessary for an effective workforce included critical thinking and problem solving, effective communication, collaboration and team building, and creativity and innovation (Roberson, 2011). Expectations of adults required the ability to make informed decisions, interest and skills to be civically involved in the community, and development of a personal identity and knowledge of how that identity relates to society (Beale-Spencer, 2011; Benninga & Quinn, 2011; Gonzales, 2011; Roberson, 2011). Roberson (2011) further noted that mind work replaced physical work in the U.S. He proposed that current educational practices were efficient in another era but were out of date in more recent changing employment market.

Although transition to adulthood is a requirement of all youth as they age, special attention to this transition is necessary for youth with disabilities in order for similar outcomes to be achieved. The Education of the Handicapped Act Amendments of 1990 (Aleman, 1990), later named the Individuals with Disabilities Educaiton Act (IDEA), included language about the transition from high school into the adult world that follows. The Division of Career Development and Transition (1994), a subgroup of the Council for Exceptional Children, defined transition as a shift from being and acting as a student to acting as an adult within the general community. Roles found within the adult world included work, college, home and independent living, participating in the community as a citizen, and establishing and maintaining personal and social relationships (Division of Career Development and Transition, 1994). The roles of the school and community based agencies in supporting transition require "participation and coordination of school programs, adult agency services, and natural supports within the community" (Division of Career Development and Transition, 1994).

Others have indicated that transition is a complex process that involves gradual learning and adopting of new roles while modifying existing roles (King, Baldwin, Currie, & Evans, 2005; Kohler & Field, 2003; Timmons, Wills, Kemp, Basha, & Mooney, 2010; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006). Several authors expanded this definition to include quality of life, happiness, social and environmental factors, and rights and freedom for all (Bremer, Kachgal, & Schoeller, 2003; Dixon, 2008; Wehman, 1992). Additionally, free will, civil and human rights, freedom of choice, independence, personal agency, self-direction, and individual responsibility were

key characteristics of adulthood for all (Blomquist, 2006; Bremer, Kachgal, & Schoeller, 2003; Mithaug, 1996; Wehman, 1992).

Still others suggested that transition must involve the development of creativity and innovation, critical thinking and problem solving skills, communication and collaboration skills; literacy related to information, media, information, communications and technology; and skills required to be civic participants and character education (Beale-Spencer, 2011; Benninga & Quinn, 2011; Gonzales, 2011; Roberson, 2011). Although skills have been determined, no specific timeline or curriculum have been identified and education practices related to each of these vary by state in the United States (Benninga & Quinn, 2011).

Youth with and without disabilities transition to adult roles. Transition spans 2 decades and varies for everyone (Halpern, 1994; Deci, Vallerand, Pelletier, & Ryan, 1991; Gonzales, 2011). The transition from childhood learning, in which education is facilitated by an adult, to adult learning, in which education and training are socially promoted and practiced, involves influences from both the environment and personal characteristics (Abery & Stancliffe, 1996; Bandura, 1977; Bronfenbrenner, 1967; 1970; 1973; 1975; 1977; 1979; 1985; 1988; 1989; 1992; 1993; 2001; Brown-Glover, 1992; Cook, Brotherson, Weigel-Garry, & Mize, 1996; Halpern, Close, & Nelson, 1986; Mithaug, 1996; Powers et al., 1996; Turnbull, Blue-Banning, Logan Anderson, Turnbull, Seaton, & Dinas,1996).

Transition involves life changes, adjustments, and cumulative experiences that a youth must synthesize and analyze in order to function successfully in the adult world.

Transition is a time when youth and young adults face confusion about self-awareness, sexuality, finances, bodily changes, employment, and mobility in the community (Halpern, 1987; Timmons et al., 2010; Wehman, 1992).

Wehman (2013) identified six aspects of transition that are common for youth with and without disabilities. These included employment, community and home living arrangements, independent mobility, peer relationships, sexuality, and self-esteem. Common development in thinking, emotional abilities, interpersonal skills, and biological growth in all youth lead to social competence, development of supportive relationships, engagement in citizenship, and interdependence (Timmons et al., 2010).

Halpern, Close, and Nelson (1986) further identified independent living skills and roles necessary for adults to function within their community. These included "personal hygiene, clothing care, household chores, food preparation, money management, grocery shopping, gaining access to generic social services, organizing transportation, and making medical and dental appointments" (Halpern, Close, & Nelson, 1986, p. 30). The issues faced by youth with disabilities are the same as those faced by youth without disabilities. Timmons et al. (2010) noted that successful outcomes for all youth required "leveraging individual strengths" (p. 2-1) while anticipating difficulties and lessening them in the areas of academics, social skills, and employment.

Theoretical Basis

This section discusses theories of social learning in terms of the social systems in which youth learn and exist. Bandura's social learning theory introduced modeling as an effective means of shortening the length of time and reducing energy needed to learn a

skill. Bronfenbrenner's systems theory described the multiple settings within and among which the individual develops.

Social Learning Theory

Social learning theory suggested that individuals learn from observing actions and behaviors around them (Bandura, 1977). Bandura (1977) began the discussion that behavior occurs as a result of the interaction between the person and the environment. This concept was the springboard for social learning theory that relied on reciprocal interactions between the individual and the environment which included other characters within that environment. Bandura emphasized the interdependence among behaviors, personal experiences, and the environment and suggested there was a strong connection among these. Behavior was explained as reciprocal interactions between the person and the environment: "Within this approach, symbolic, vicarious, and self-regulatory processes assume a prominent role" (Bandura, 1977, pp. 11-12).

Reciprocity was a necessary component in learning (Bandura, 1977; Beale-Spencer, 2011). The individual and the environment were consistent influences upon one another. Individuals were able to control and change their environments by controlling their own actions. The novel concept produced by Bandura (1977) was that people can influence their own destiny. By using past knowledge of experiences (either personal or vicarious), individuals created informed change to their environment, thus modifying the stimuli within their environments to which they would react in the future and so on.

Modeling. The effects of social learning have been documented through research. First, social learning was found to reduce the amount of time and effort required to learn

a new skill or concept through personal or vicarious experiences (Bandura, 1977; Bandura & Walters, 1963). Bandura (1977) stated that "rarely do people learn behaviors under natural conditions that they have never seen performed by others" (p. 22). Such observation of behaviors became known as *modeling* and research has provided evidence that modeling is an effective strategy for teaching behaviors (Bernstein & Tiegerman, 1993; Eurich, 1996; Goldstein, Sprafkin, Gershaw, & Klein, 1980; Knoff, 2003). Individuals who viewed behaviors being completed by others provided for *vicarious* learning. Vicarious learning was essential when individuals learn behaviors that may result in hazardous conditions if performed inappropriately or when the costs associated with failure were steep (Bandura, 1977). Next, observing someone else receive rewards for executing a behavior helped the learner to set up expectations he or she would receive similar consequences when he or she performed the same behavior (Bandura, 1977). The amount of energy and time required to code the behaviors into memorable components was also decreased.

Bandura (1977) noted that individuals who model behaviors often adjusted their modeling based on the perceived ability of the learner. Models balanced extrinsic control with letting go of such control as the individual aged or built more mature skills. The model also served as a social cue. Modeling spreads ideas and practices across societies and within them. Furthermore, Bandura and Walters (1963) suggested that modeling elicited chunks of a behavior chain rather than one step at a time with or without reinforcement. This type of learning was more effective than providing consequences for

each step in a chain of events while providing the necessary supports for learning chains of behaviors needed by learners with ID (Bandura, 1977; Bandura & Walters, 1963).

The effects of modeling were more than simply reinforcing a behavior or ignoring a behavior as in operant conditioning. Modeling involved introducing new concepts and behaviors while building on existing behaviors (Bandura, 1975; Bandura & Walters, 1963). Previously learned behaviors occurred in novel settings and in response to new stimuli if the learner had viewed the behavior as it was performed by a model. Finally, seeing someone else as he or she received reinforcement for doing a behavior might cause the learner to demonstrate the behavior to gain the reinforcement while seeing someone receive punishment or negative consequences might extinguish the behavior in the learner (Bandura, 1965). Bandura (1965) suggested that pairing operant conditioning with modeling can be effective. He added that the consequence type can determine if behavior will be repeated or extinguished but cautioned that consequence type does not teach new behaviors.

Diverse learners and social learning. While the majority of Bandura's (1977) work focused on the general population, he hinted that individuals with delayed verbal and conceptual skills as well as cognitive limitations would benefit from modeling and social learning. He suggested that individuals with low verbal skills would benefit more from observing someone else demonstrating a behavior than from strictly verbal input and interactions. Specifically, Bandura targeted social and academic skills as those in which the use of social learning would have the greatest benefit. As noted previously, social and academic skills are necessary for all learners as they transition from the

structured setting of the school into acceptable adult roles. Learning social behaviors "…would be very inefficient if a new set of responses had to be acquired in every social situation" (Bandura & Walters, 1963). Imitation is a necessary part of learning (Bandura & Walters, 1963).

Components of social learning. Components of modeled or symbolic learning were defined by Bandura (1977). These included attentional processes, retention processes, motor reproduction processes, and motivational processes. Each of these components is necessary, according to Bandura, for social learning to be effective.

Attentional processes require attention to the target behavior as well as an accurate perception of the behavior. The model must demonstrate that the behavior was important and had enough value that the learner should attend to it (Bandura, 1977). *Retention processes* must also be present for the learner to transfer what he or she viewed into short term and then long term memory. The learner must interpret the visual imagery if he or she has limited verbal language as visual imagery was necessary before an individual acquires such skills. In addition, visual imagery was beneficial when an individual was learning behaviors that were hard to put into symbolic language for later use. Verbal coding was also important when triggering the retention processes. Learners swiftly retrieved information that is held in simple code (Bandura, 1977). *Motor reproduction* involved converting the visual and verbal coded symbols into action. People gained close approximation through observation. Then, refinement of the approximations was based on feedback and focused practice of segments of behaviors (Bandura, 1977). Finally, *motivational processes* provided value for producing the

behavior. People were more likely to do a behavior if it had value to them or if the observed consequence was valuable. If a learner failed to match behaviors to a specific stimulus, it may have been because he or she did not observe relevant information, inadequately coded the modeled behavior, failed to retain what was learned, was physically incapable of performing the behavior, or was not motivated to perform the task (Bandura, 1977).

Social learning theory emphasized the need for reciprocity between the individual and the environment in which he or she exists. The learner influence his or her environment through behaviors (Bandura, 1977). Modeling was found to be an effective way to learn new behaviors while building on behaviors already in the learner's repertoire. It was also found to be effective in showing the performance of known behaviors to be effective in different contexts and settings (Bandura, 1965; Bandura & Walters, 1963). While multiple components were necessary for a modeled behavior to be effective (attentional processes, retention processes, motor reproduction, motivational processes), failure to reproduce the modeled behavior may have been caused by any one of the components. Bandura (1977) suggested that it is vital to determine the component(s) that were absent prior to reteaching the skill regardless of the instructional strategy used.

Systems Theory

Bronfenbrenner (1973; 1975; 1979) was not content with thinking about systems as they related to children's development. Instead of studying children's behavior in unnatural settings under unrealistic circumstances that led to created behaviors,

Bronfenbrenner chose to look at development in natural settings under natural conditions and eliciting real responses to stimuli (Lerner, 2005). This change in settings led him to study the manner in which multiple settings interact with one another. As such, he proposed a systems theory that focused on the make-up of multiple settings, one within the other yet influenced by all other environments and characteristics, stimuli, experiences, and observations (Bronfenbrenner, 1979).

Bronfenbrenner (1979) suggested a need to extend research from a focus on the developing child to the multiple settings and environments in which the child exists. He added that a description of the environments was not enough; behaviors and interactions in each setting were needed to provide a thorough picture of the development of the child (Bronfenbrenner, 1979).

Bronfenbrenner (1979) proposed an ecological approach to defining child development. He likened the systems to a "set of [four nested] Russian dolls" (p. 3). These systems surround and interact with the individual as he or she experiences social interactions, influences the environment, and reacts to changes within the environment (Beale-Spencer, 2011; Bronfenbrenner, 1979). While the majority of researchers at the time focused on studying the individual in artificial settings thus creating artificial responses, Bronfenbrenner chose to study the individual in his or her natural setting resulting in natural responses and experiences (Lerner, 2005). In addition, Bronfenbrenner (1992) explored the concept that reality in one setting is not necessarily real in another setting. As such, he found it necessary to study interactions rather than just the person within each setting (Bronfenbrenner, 1979; Lerner, 2005).

The systems are described below. Keep in mind that these systems are made up of living, changing, and dynamic interactions that influence the individual and are influenced by the individual in return. It is a reciprocal relationship between the person and the system. Simply describing the environment as a place, time, and event is not enough.

Microsystem. According to Bronfenbrenner (1979), a "microsystem is a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics" (Bronfenbrenner, 1979, p. 22). In his later work, Bronfenbrenner (1989; 1992) added personal characteristics to the definition as key features that influence how the individual interacts with others and with the environment. These characteristics included the social, physical, and symbolic features of the individual that encourage or discourage interaction with others.

According to Bronfenbrenner (1979), the microsystem was the smallest doll within a set of nested Russian dolls. It surrounded the individual and influenced his or her actions while changing based on the individual's actions. Within the microsystem, the individual had his or her first social and environmental experiences to which the individual reacted as well as influenced (Beale-Spencer, 2011; Bronfenbrenner, 1979). Activity, role, and relations with others in the environment made up the components of the microsystem (Bronfenbrenner, 1979). Activities within each microsystem defined the role an individual plays within that setting as well as the relationships he or she had with others. Although similar activities occurred within multiple environments, each

microsystem included a definite role for the individual. That role was specific to the environment and the context at that time.

Bronfenbrenner (1979) chose to study more than the individual; he studied the interaction between people within each environment. The vital components of human development were the interactions between and among people as well as reciprocal influences within the environment (Beale-Spencer, 2011; Bronfenbrenner, 1979). To study one or both individual, a researcher would not learn about the development of the individual. Instead, the researcher must study the interactions. Those interactions created systems that were distinctly different from the individual and his or her personal characteristics. This interaction took place between members of a *dyad*. Bronfenbrenner was convinced that the interactions between individuals within any microsystem had a synergistic impact on the individual as well as the environment; that is, the interactions were more than the individual characteristics and activities of the individual members within the microsystem (Bronfenbrenner, 1979).

Reciprocity was a major component within any microsystem (Beale-Spencer, 2011; Bronfenbrenner, 1973). An individual within any setting cannot exist without the give and take of the individual and the environment or other characters within the environment. Human behavior shapes the environment while also being shaped by the environment. For instance, a newborn child responds to biological needs through cries. The cry changes the environment and alerts the parent that the child needs something to happen. The parent responds to this form of communication by taking action. The child, in turn, responds to the parent's action. This reciprocal socialization is dependent on the

child's actions as well as responses to those actions by the parent (Bronfenbrenner, 1973).

In a review of child psychology literature, Bronfenbrenner, Kessel, Kessen, and White (1986) found that child psychology included the discussion of the biological characteristics of the infant as influential attributes but dropped these after infancy. These characteristics influenced behavior and development through the life span, not just in infancy (Bronfenbrenner, Kessel, Kessen, & White, 1986). The bioecological model, as proposed by Bronfenbrenner, Kessel, Dessen, and White (1986), added the effect of heredity, proximal processes, actualized genetic results with unknown unactualized potential, environmental influence on these actualized and unactualized qualities (Bronfenbrenner, 2001a). Important in the discussion of the microsystem was the influence of hereditary manifestations within each setting. In other words, Bronfenbrenner et al. (1986) determined that genetics played a part in the development of an individual as much as did the context in which the individual existed, or the environment.

Mesosystem. A mesosystem involved the manner in which two or more environments interact to support or confuse an individual. For example, Bronfenbrenner (1979) suggested the model of a child, the manner in which the school and home interact, and influences found within the neighborhood. Mesosystems for an adult may include the home, work, and social environments. The *mesosystem* included interactions between microsystems. A child develops first within the home. From there, he or she expands into experiences in the neighborhood and community such as the local library, school,

community center, church, or other settings. While each of these settings was considered a microsystem, Bronfenbrenner (1977; 1979) studied the interaction between and among these settings. Consider the relationship between the home and the school. Parental support of the educational environment may have a significant impact on a child's success at school. The child learns to read at school. He or she can then transfer that learning into the home environment. Once the child generalizes reading skills, the activities for which reading is required at home become available to the individual, such as reading recipes or lists, playing games, or choosing channels to watch on television based on the menu/guide. As the child spends more time reading at home, his or her reading skills may improve at school, allowing access to more complex tasks within multiple subjects such as word problems in math, chapter books, and even community based activities. The interaction between the school environment and the home environment constitute the mesosystem. Multiple mesosystems made up an individual's world. The relationships that were strong and in harmony with each other created more success for the individual than those that were dissonant with each other (Garbarino & Abramavitz, 1992).

Exosystem. The exosystem included factors outside of the individual's direct participation that influenced his or her direct existence (Bronfenbrenner, 1979). This system involved influences from activities and environments in which the individual was not a direct participant (Bronfenbrenner, 1979). Exosystems did not involve active participation by the individual yet impacted the individual significantly (e.g., parental job, school board decisions) (Bronfenbrenner, 1977).

An example of an exosystem that has a strong influence on a child's development was a parent's work environment. When a parent works late, the child spent less free time at home since he or she needed to remain at school or a child care setting later in the day. A parent's work also influenced the child if it requires the parent to move to another city. The child then was reintroduced to new microsystems in the new city and developed new mesosystem connections. Reestablishing friendships, adjusting to new cultures, and saying good-bye to the familiar context within which the developing child existed can cause significant strain on the child's development.

Consider another example, the closing of a business that a parent had frequented for many years. The local grocery store was two blocks from the home. Since it closed, the nearest store became the one two miles away. The family now changed routines that had been in place for decades in order to accommodate the longer commute to the store, additional money spent on transportation to and from the store, and stress caused by the decrease in time available for other activities. Although the child did not have anything to do with the store closing, he or she spent more time commuting to the store and participated in fewer after school activities. Although it may have been perceived as an inconvenience, the social implications of limited time to hang out with friends in structured and unstructured activities can have significant negative outcomes if they lead to social isolation. Other exosystems that can impact youth with and without disabilities included a change in parental employment or benefits; community development; local, state, and federal elections; stock market activity; and many others.

Macrosystem. Bronfenbrenner (1979) termed the largest doll within the set of nested dolls as the *macrosystem*. "The macrosystem may be thought of as a societal blueprint for a particular culture, subculture, or other broader social context (Bronfenbrenner, 1992, p.149). The macrosystem was made up of the "belief system, resources, hazards, lifestyles, opportunity structures, life course options, and social interchange" (Bronfenbrenner, 1992, p. 150). Bronfenbrenner's (1977; 1979; 1992) definition of a macrosystem included culture, community, and socioeconomic status, each of which influenced individuals in positive, neutral, and negative ways at multiple points in time.

Navigating Systems

Bronfenbrenner (1979; 1985) studied the interactions of the individual within multiple settings to gain a better knowledge of development. An individual can experience one or a combination of systems at the same time. Such interactions vary considerably not only based on the setting but based on others within the setting. For example, a teenage boy behaves differently in the presence of peers, siblings, parents, teachers, employers, and coaches while potentially remaining in the same setting. Interactions and behaviors are context specific.

Social systems theory must be considered within the educational setting in order to influence the development of the individual child or youth. Education law within the United States has evolved from exclusion of individuals with disabilities to full inclusion to the greatest extent possible (Individuals with Disabilities Education Act 1994).

Supports must be provided within each educational environment to assist children and youth with ID in learning independent and interdependent skills.

Garbarino, Gaboury, and Planz (1992) summarized a systems perspective for children and youth in one sentence. "The *goal* of independence… ignores the *fact* of interdependence—the mutual dependency of American families and the social systems of their environment" (Garbarino, Gaboury, & Planz, 1992, p. 281). It is not possible for people to develop totally independently.

Bronfenbrenner's reference to a set of Russian dolls (1979) provided the first picture of what human development within multiple settings might look like. However, he himself noted the incomplete nature of his original ecological approach to human development. He left out the biological characteristics that made each individual unique. The Russian dolls analogy left out the center, and most important, piece of the nested set—the individual within the smallest doll. Further, Bronfenbrenner's (1979) reference to nested dolls left out the interaction between and among the environments. While motion within the largest doll (the macrosystem) impacts the space around all of the smaller ones, no discussion was made available about what happened when the smallest doll (the microsystem) changes or moves.

Within the microsystem of the education setting exist even more systems that impact the educational development of children and youth with ID. One way in which education has accommodated the needs of children and youth with ID is to hire and train paraeducators.

The Council for Exceptional Children (CEC) described the diverse roles of paraeducators to include supporting pre-Kindergarten classes for children with special needs, participation in community activities, job coaching, resource room support, and inclusive support within the general education setting (CEC, 2010). This list, according to the CEC, was not all inclusive; "in short, paraeducators are present in most educational settings under the supervision of the teacher, and they have skills and contributions that make them highly valued and sought after in education" (CEC, 2010).

Bronfenbrenner (1979) attributed a person's ability to influence their own environment to the unique social nature of humans. He suggested that the characteristics of developing individuals played important roles in the way they responded to the environment and in the way the environment was changed by the developing individuals (Bronfenbrenner, 1979).

In the education system in the United States, much attention has been given to the child developing within the school setting. Little, however, has been given to the development of the staff who work with the developing child. Therefore, little has been given to the development of paraeducators who support children and youth with ID.

Some systems in American society create and maintain dependency on others. For example, within education, teacher preparation programs and training provided to teachers' aides or paraprofessionals create a reliance on systems and learned helplessness that keeps students from becoming independent and self-reliant (Rubie-Davies, Blatchford, Webster, Koutsoubou, & Bassett, 2010).

Systems within the American schools have different characteristics based on the role of the individual. Paraeducators are used to support children and youth with ID to succeed in general and separate class settings. When used appropriately, teacher's aides, sometimes known as paraprofessionals, are invaluable to the education of students with disabilities. However, Rubie-Davies et al. (2010) conducted a study using "talk-level codes" (p. 434) to determine differences in types of interactions in teacher-student interactions and teacher's aide-student interactions. Although results found similar types of talk-levels of both groups of education professionals, significant differences were noted. Teachers were proactive, tended to explain concepts, used statements as prompts, asked questions to engage thinking, provided feedback, created links between lesson objectives and current learning experiences, and set up future learning. Teacher's aides' talk-levels, conversely, were reactive. They used statements as prompts and asked surface level questions. Both groups of adults in the classroom spent time explaining concepts; however, teacher's aides' explanations were sometimes confusing and not correct. Teacher's aides often gave answers and their focus was on task completion. Rubie-Davies et al. (2010) found that the use of teacher's aides in the classroom to support students with disabilities may actually foster reliance on staff and learned helplessness rather than supporting independence.

Current Research

The transition needs of youth with ID are similar to those of youth without disabilities (Benninga & Quinn, 2011; Roberson, 2011; Wehman, 2013; Wehmeyer, 2006; Wehmeyer, Palmer, Smith, Parent, Davies, & Stock, 2006). Wehman (1992) stated

"…we must realize that young people with disabilities are first and foremost *young people*" (Wehman, 1992, p. xvii, emphasis included in the original text). Their actions and experiences align with those of other transitioning youth. They have difficulty with realizing their potential, have issues with self-esteem, and struggle to make the shift to adulthood including establishing a home, participating in the community, and developing and understanding their sexuality (Wehman, 1992).

Wehman defined transition as a "continuous state of change and evolution" (Wehman, 1992, p. xvii) experienced by all American youth as they exit high school. All citizens are faced with social challenges. The curriculum taught in high school to youth with ID should be the same as that taught to all other youth and should prepare youth with the skills needed to be "independent, contributing members of their community" (Halpern, 1987, p. 125). In addition, Mithaug (1996) stated,

> The fact that these individuals may have a disability *is a side issue* to the moral problem created by diminished prospects for self-determination. It is a side issue because the moral claim for the right to freedom trumps all other claims for social or educational redress when that right is abrogated. (p. 160)

The movement from educating youth with disabilities in a different environment and with different intended outcomes is a thing of the past. As Wehman (1992), Mithaug (1996), and Halpern (1987) indicated, youth with disabilities are first and foremost youth, with disability being as common as a difference in eye color.

Pragmatically, educating youth with peers without disabilities makes sense (Wehman, 2013). All youth need the skills required for working in 21st century jobs

(Roberson, 2011); some youth need to learn it in a slightly different manner (Beale-Spencer, 2011; Gonzales, 2011; Wehman, 2013). Adult employment expectations no longer fit the assembly line process where each person does a specific piece and sends it on to the next. Nor is it a small group that performs a specific skill set. The end product in an assembly line is not one person's responsibility. The assembly line separates thinking from doing (Roberson, 2011). Youth with disabilities have been included in many aspects of general education with their non-disabled peers (Aleman, 1990; IDEA, 2004). This integration has taught all students how to be more proficient at participating in community activities (Wehman, 2013). Wehman (1992) found that students learned "how to manage social problems more effectively as well as how to negotiate help in the community" (Wehman, 1992, pp. 73-74) when students with and without intellectual disabilities were educated together.

That said, youth with intellectual disabilities demonstrate different learning styles from the methods generally taught in the general education settings of high schools (Wehman, 2013). Many of the strategies for educating youth with ID are effective with youth without disabilities and actually may help a greater number of youth to succeed in the general education classroom (Wehmeyer & Palmer, 2003).

Characteristics of Youth with ID

Youth with intellectual disabilities are first and foremost youth (Halpern, 1987; Wehman, 2013). In addition to the typical issues faced by teenagers without disabilities, youth with ID have difficulty in several other areas. Youth with ID have difficulty understanding abstract concepts, generalizing from one setting to the next, using

language and communicating (Stock, Davies, Davies, & Wehmeyer, 2006). They struggle with memory, organization, planning, and goal setting (Gentry, Wallace, Kvarfordt, & Lynch, 2010; Wehmeyer, 2007). Youth with ID often have deficits in behavioral memory as well. Gentry, Wallace, Kvarfordt, and Lynch (2008) defined behavioral memory deficits as working and prospective memory that included attention and executive functioning limitations. Such skills are necessary for youth to successfully take medications on time, create and manage a schedule, keep appointments, and follow through on tasks with multiple steps (Gentry, Wallace, Kvarfordt, & Lynch, 2008; Wehmeyer, 2007). Youth with ID have deficits in setting expectations, finding strategies to solve challenges and reach goals, and adjusting them as needed (Mithaug, 2006; Wehmeyer, 2007). In fact, they generate fewer reasonable options to problems in general (Wehmeyer, 2007).

Youth with ID fail to learn implicitly; that is, they are not able to observe the environment and activities that are occurring and take away skills or knowledge as many others without ID can do (Serna, 1996; Wehmeyer, 2007). Social and interpersonal skills are often problematic for youth with ID as well (Halpern, Close, & Nelson, 1986; Serna, 1996; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006; Wehman, 1992; Wehmeyer, 2007).

Unfortunately, even with research that touts the ability of youth with ID to learn valuable skills such as problem solving, job specific task completion, or social competence (Abery & Zajac, 1996; Bremer, Kachgal, & Schoeller, 2003; Dixon, 2008; Doll, Sands, Wehmeyer, & Palmer, 1996; Halpern, Close, & Nelson, 1986; Mithaug,

1996; Peraino, 1992; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006; Wehman, 1992; Wehmeyer, 2007), these characteristics limit the number of complex skills taught to youth with ID that are necessary in adult social roles (Davies, Stock, & Wehmeyer, 2003). Individuals with ID show significantly lower rates of employment, postsecondary education participation, and providing care to family members (Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006). Those who are employed typically work in jobs that are entry level and that receive the lowest wages (Halpern, Close, & Nelson, 1986; Kohler, 1993; Kohler & Field, 2003; Peraino, 1992; Wehman, 2013). As such, they are also typically the most vulnerable jobs when the economy fluctuates (Halpern, Close, & Nelson, 1986). Social skills necessary to maintain employment in these vulnerable positions are lacking and impact all aspects of life (Halpern, Close, & Nelson, 1986; Knoff, 2003; Peraino, 1992; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006; Wehman, 2013).

According to Timmons et al. (2010), the development of physical characteristics and adult-directed competencies continues after high school exit and at least through the mid-20s. Those youth with higher educational achievement and work experiences upon high school exit tend to have an advantage over those with little or no work experience and poorer academic achievement (Timmons et al., 2010).

Although youth with ID demonstrate differences and deficits when compared to their peers without disabilities, the expectations of adults in society remain the same (Gonzales, 2011). Change is needed for all youth to exit high school prepared for adult social roles and to be contributing members within their community.

Acceptable Adult Social Roles

There is a need to discuss adult social roles that are acceptable around the country. Beale-Spencer (2011) posited that vulnerable populations are viewed as burdens on society through use of social resources and programs while demonstrating the inability to contribute effectively to the community, including civic responsibilities. Adults view coping strategies of these vulnerable youth as maladaptive, rendering them "unwanted and not valued as American citizens, or that they are not contributing societal members" (Beale-Spencer, 2011, p. 65). Identification of adult expectations must be communicated to educational institutions in order to drive curricula to meet the ever changing needs of the "real world."

Acceptable adult roles for all citizens require the demonstration of self-determined behaviors (Bremer, Kachgal, & Schoeller, 2003; Deci, Eghrari, Patrick, & Leone, 1994; Deci, Vallerand, Pelletier, & Ryan, 1991; Dolls, Sands, Wehmeyer, & Palmer, 1996; McGlashing-Johnson, Agran, Sitlington, Cavin, & Wehmeyer, 2003; Sands & Wehmeyer, 1996b; Wehmeyer, 1996; Wehmeyer, 2007) and the ability to learn socially from those within the environments in which the person exists (Bandura, 1977; Bernstein & Tiegerman, 1993; Eurich, 1996; Bronfenbrenner, 1967; 1970; 1973; 1975; 1977; 1979a; 1979b; 1985; 1988a; 1988b; 1989; 1992; 1993; 2001a; 2001b; Goldstein, Sprafkin, Gershaw, & Klein, 1980; Knoff, 2003).

Several researchers have identified socially acceptable adult social roles in the US. Markers of adulthood included completing school, moving out of the family home, establishing employment, getting married, and becoming a parent (Gonzales, 2011).

Securing and maintaining employment; attending postsecondary education and training; participating in leisure activities and citizenship; providing care to a family member; demonstrating free will and civic and human rights; making choices; living interdependently; and demonstrating personal agency, self-direction, and individual responsibility were all identified as activities and roles that are appropriate for youth and young adults with and without disabilities as they become adults (Bremer, Kachgal, & Schoeller, 2003; D'Alonzo, 1983; Halpern, 1987; Kohler, 2003; McGlashing-Johnson, Agran, Sitlington, Cavin, & Wehmeyer, 2003; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006). While researchers have agreed that there is a set of socially acceptable adult social roles, little agreement has been gathered on the curricula necessary for students to reach these goals (Benninga & Quinn, 2011; Beale-Spencer, 2011; Halpern, 1987; Kohler, 1993; Roberson, 2011). As the expectations of adults as employees and citizens change, it is vital to teach the skills needed to be a successful adult before the youth enters the adult world. According to Roberson (2011), however, schools are failing to make the necessary change.

A study of problems associated with the transition to adult roles found that individuals with and without disabilities reported the same problems with functioning in adult roles: finances, social interactions, keeping up the home or residence, and purchasing and/or preparing food (Halpern, Close, & Nelson, 1986). The researchers concluded that youth who exit high school place much emphasis on the amount of money they make and their personal satisfaction with that level of income influence their quality of life (Halpern, Close, & Nelson, 1986). All youth have similar goals for adulthood.

Looking at these goals and skills separately creates unnecessary differences between persons with intellectual disabilities and those without disabilities.

Employment. Employment is viewed as the most socially appropriate, normative adult role in the United States (Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006). Youth employed while in high school experience better work related outcomes (Halpern, 1994; Halpern, Close, & Nelson, 1986; Kirchner & Smith, 2005; Kohler, 1993; Peraino, 1992; Van Naarden Braun, Yeargin-Allsopp, & Lollar; Wehman, 1992). Halpern, Close, and Nelson (1986) indicated that citizens in the US are viewed as either "productive contributors or encumbrances to society" (p. 73). This was supported by Beale-Spencer (2011) who addressed the perspective that "stereotyping depicts [this vulnerable population] as drains on societal resources and…unable and incapable of making civic contributions" (p. 65). As such, employment impacts the multiple systems and settings in which the individual exists (Beale-Spencer, 2011; Bronfenbrenner, 1979; Gonzales, 2011; Halpern, Close, and Nelson, 1986). The activities associated with working include "preparing for work, commuting, producing, interacting with co-workers and supervisors, and earning a living" (Halpern, Close, & Nelson, 1986, p. 74) and were identified as components of successful adjustment into the adult community.

Adults who are working experience increased productivity resulting from employment and independence within the community. Such employment and independence lead to contribution to the income tax base that supports social programs. Employment has been defined as a source of pride and social opportunities while providing support for the development of self-esteem, acquisition of wages, and receipt

of benefits (Halpern, Close, & Nelson, 1986; Wehman, 2013). Furthermore, increased employment leads to a reduction in need for and use of social programs (Beale-Spencer, 2011; Blomquist, 2006; Halpern, 1994; Kirchner & Smith, 2005; Peraino, 1992). For example, individuals who receive health insurance from their employer as a benefit for working use social programs such as Medicaid at a much lower rate than those who do not receive such benefits (Halpern, 1994).

Additionally, the psychological environment provided through the work environment can affect social inclusion by peers if they fit into the environment (Cook, Brotherson, Weigel-Garry, & Mize, 1996). Unwritten rules that make up the culture of a business impact the "fitness" of the individual and, if overlooked, may create an instance of dissonance between the employee and the environment (Griffon & Sherron, 1992). Social activities scheduled outside of the work day are often spurred by conversations with colleagues throughout the work day. Such social conversations provide a foundation for the need for competitive employment to enhance the quality of life of the individual. These benefits can be enhanced by teaching communication, collaboration, and teamwork while in high school (Benninga & Quinn, 2011; Roberson, 2011).

Competitive employment impacts individuals in many other life areas as well. Having a job allows one to purchase needed assistance, goods and services, and technology that may serve as cognitive aides through receipt of a paycheck (Halpern, 1994; Roberson, 2011). Such technological advances have the potential to normalize the individual with ID by compensating for areas in which the individual is weak (Timmons et al., 2010). In addition, health care, transportation to work and recreational activities,

and access to other consumables become available to persons who earn a paycheck (Blomquist, 2006; Dixon, 2008; Kirchner & Smith, 2005).

Community adjustment. Adjustment into the community involves changes of moving from pediatric to adult health care, from school to work, and from the home in which an individual grew up into a community based living situation (i.e., apartment, dormitory, house, care facility) (Blomquist, 2006). This shift from adolescent expectations to adult expectations ranges in duration but envelops benchmarks experienced by most American youth.

Wehmeyer (2007) discussed the rights of citizens that are "generally accepted but not civilly protected" (p. 68). He suggested that teaching assertiveness in the areas of negotiation, compromise, elaboration, and verbal and nonverbal communication were necessary for community adjustment. Roberson (2011) added the need for experiencing digital lifestyles, thinking tools, and learning strategies for research. It is necessary for young adults to get along with others in their community, act appropriately in social contexts, and follow the laws of the community, state, and nation (Halpern, Close, & Nelson, 1986).

Social and interpersonal networks. The development of social networks has a strong role in the life of high school students as can be seen by the herds of teenagers who move together in so many settings. The development of social relationships for young adults provides a safety net of people who will support the individual as he or she pushes away from the structure and control of parents. Social networks are vital for the survival of youth as they break away from the known and venture into the unknown

(Benninga & Quinn, 2011; Beale-Spencer, 2011; Gonzales, 2011; Roberson, 2011; Wehmeyer, 2007). Halpern (1994) suggested that the development of personal and social relationships is the most important part of transition. Halpern, Close, and Nelson (1986) identified "social relationships" and "leisure activities" as the "most basic strands that are woven together into the fabric of people's lives" (Halpern, Close, & Nelson, 1986, p. 118). Further support from Beale-Spencer (2011) noted that all youth transitioning from high school into adult roles need social support to develop their personal identity that includes accessing social resources and becoming civic actors within the community.

Support from social networks is necessary for individuals to adjust to the adversity they will face as adults (Antle, Montgomery, & Stapleford, 2009; Roberson, 2011). Interactions with social partners lead to the development of social problem solving. Although social problem solving is typically learned implicitly by children and youth, explicit teaching of communication and problem solving is necessary for many young adults (Deci, Vallerand, Pelletier, & Ryan, 1991; Doll, Sands, Wehmeyer, & Palmer, 1996; Wehman, 1992; Wehmeyer, 2007). In a study by Sotiropoulos and D'Astous (2012), social norms influenced the overspending using credit cards of young adults. The strengths of ties to support people and perception of the influence others had on buying using credit cards was linked to perceived expectations of peers, whether real or imagined (Sotiropoulos & S'Astous, 2012).

Friendships are also important parts of social and interpersonal networks. Wehman (2013) found that individuals with strong friendships were more often employed, had adequate housing, and were much less restricted in their ability to move

around the community. Integrated experiences, Wehman (1992) found, correlated with increased competence in the community, greater ability to manage social problems, and increased ability to negotiate help when in the community. Youth were more likely to succeed in employment and in the community (Wehman, 2013).

Roberson (2011) recommended embedding into the general curriculum social skills, problem solving, critical thinking, innovation, communication, and collaboration while Benninga and Quinn (2011) added civic and character education. Explicit teaching of these skills is necessary for youth as they transition from high school into post-secondary roles. The physical, psychological, and social aspects that develop during transition merge to create a road upon which the individual travels into adulthood. This path forms the foundation upon which the individual's belief system stems (Beale-Spencer, 2011). After the school years, the social norms of high school no longer apply. Unfortunately, US schools tend to teach youth how to master interactions and tasks that are required to complete school rather than teaching those skills that are required in the employment setting (Roberson, 2011; Rubin, 1996). Communication between schools and community based businesses is needed to change the curriculum to meet the needs of the local business community. Roberson called for a change, stating "education and its methods must evolve" (p. 893). He noted that the real world outside of schools is changing and students are changing their skill sets with that change. Tech savvy youth are carrying devices into schools generating an untapped potential not previously considered in education.

Residence. As youth exit high school, they often move into community based housing situations as opposed to staying in their parental home. In fact, Gonzales (2011) noted that moving out of the family home was one marker of transition to adulthood. Getting an apartment with a roommate, moving into the residence hall at an institute of higher education, and living alone in a house or apartment are all common moves made by youth as they transition to adult roles. A person's home can meet the needs of establishing an identity and a sense of place, acquiring privacy or socialization opportunities, and developing a sense of safety (Cook, Brotherson, Weigel-Garry, & Mize, 1996).

Home is a place where the individual is naturally provided with choices: what to wear, what and when to eat, when to get out of bed, level of cleanliness of the home, flexibility in timelines for completing home living tasks (Abery & Zajac, 1996). For example, in a study by Halpern, Close, and Nelson (1986), each individual was found to have his or her own definition of what clean means. Consequences for cleaning a home varied from situation to situation. Some individuals experienced eviction from their residence while others received a limited number of visitors due to the filth and the smell of their home (Halpern, Close, & Nelson, 1986).

The perception held by others as to the value of individuals from vulnerable populations creates stereotyping that "depicts them solely *as drains on societal resources*" (Beale-Spencer, 2011, p. 65). Such perceptions are upheld when the individual lacks skills. For example, social interactions may be impacted by the cleanliness of someone's home in terms of ability to care for self and clothing

appropriately. People within the social network may choose not to visit an individual or go into a public setting with an individual if he or she fails to demonstrate proper care of self and clothing. Additionally, employment may be impacted by limitations in home living skills due to poor care of hygiene or clothing. Beale-Spencer (2011) found that all youth require support to develop a sense of self and situate that self into the private and public community. Youth with ID are no exception.

Health care. Independent living includes caring for one's health needs, including physical health and mental health. Without the skills and abilities to care for oneself, individuals with and without disabilities become dependent (Blomquist, 2006). Health care issues that confront youth as they transition out of high school include prevention of sickness or disease, development of skills necessary to make informed choices about personal health care plan, financial issues related to health care, well-being and maintenance of mental and physical health, and sexuality (Halpern, Close, & Nelson, 1986; King, Baldwin, Currie, & Evans, 2005; Milbrath, 2008; Roberson, 2011). Milbrath (2008) stated that "education and transition planning within our health care community are incomplete" (p. 68). In this area, schools do not measure up to the expectations set by the world outside of the school doors (Beale-Spencer, 2011; Benninga & Quinn, 2011; Roberson, 2011)

Schools and Transition

Chapter 1 set the stage for schools to provide education to all children and youth in order to create civically minded and responsible adults within the US (Beale-Spencer, 2011; Benninga & Quinn, 2011; Brown-Glovers, 1992; Dewey, 1902; Gonzales, 2011;

King, Baldwin, Currie, & Evans, 2005; Kohler & Field, 2003; Roberson, 2011; Ward, 1996; Wehman, 2013.) While youth with and without disabilities assume these roles as adults, the role of schools in supporting the transition to adulthood varies when considering specific characteristics of each student.

Schools play an important role in the development of children and youth in the first two decades of life (Deci, Vallerand, Pelletier, & Ryan,1991). The extensive number of hours spent in school provides an ideal setting in which children and youth learn to socialize and learn academic content (Deci et al., 1991). However, students need more than just academic learning to function in today's adult world. Several researchers suggested that children and youth need to learn to solve problems, understand the relationships between facts and their application to daily life, to develop self-worth and social responsibility, and develop literacy related to information, media, communication, and technology (Beale-Spencer, 2011; Benninga & Quinn, 2011; Deci, Vallerand, Pelletier, & Ryan, 1991; Roberson, 2011). Although core curriculum content areas (i.e., math, English, social studies, science) are important, these concepts are vital as youth move to adult roles (Roberson, 2011).

In order for youth to become active civic participants in their communities, schools must provide a foundation through academic instruction and transition planning that meets the needs of the community while developing the skills needed for full participation (Beale-Spencer, 2011; Benninga & Quinn, 2011; Halpern, 1987). Basic skills form the foundation for learning. However, for youth with high incidence disabilities (e.g., learning disability, emotional disorder, mild intellectual disability), as

well as their undiagnosed peers at-risk for school failure, a different list of basic skills needs to be emphasized and taught explicitly (Roberson, 2011). These include various dimensions of communication, study skills, and learning strategies (Beale-Spencer, 2011; Benninga & Quinn, 2011; Halpern, 1987; Roberson, 2011). Halpern (1994) stated that special education teaches concepts that address issues common to all youth. All high school exiters move into adult roles. This move is a "turbulent period of time for *every adolescent,* with or without a disability" (Halpern, 1994, p. 123; emphasis included in original text). There is a need for education to provide transition planning and education to all youth, with and without disabilities. Educators need to teach youth to be citizens in the same neighborhoods, communities, work settings, social activities, and education environments throughout the lifespan.

Keeping in mind the goal of education, several researchers indicated a need to engage students and teachers in planning and implementing learning that reflects the needs of adults within the social community (Beale-Spencer, 2011; Benninga, 2011; Roberson, 2011; Serna, 1996; Wehman, 1992; 2013; Wehmeyer, 2007). Activities that increase engagement include allowing youth to express preferences and then acting on those preferences, experiencing the consequences of action, and being held accountable (Wehmeyer, 2007). Students and teachers engaged in setting goals, planning actions, and monitoring themselves while making changes as needed learn best. However, learning and demonstrating these skills requires explicit teaching (Wehmeyer, 2007).

Explicit vs. implicit learning. The larger culture in U. S. relies on both explicit and implicit social contracts (Roberson, 2011; Rubin, 1996). Social contracts are defined

by the setting in which the social interaction takes place (Bandura, 1977; Beale-Spencer, 2011; Rubin, 1996). For example, an individual's behaviors within a work environment tend to be different than behaviors in a more relaxed, less structured environment. Individuals learn to behave certain ways based on observation of others as well as direct instruction provided upon initial entrance into the setting (Bandura, 1977; Rubin, 1996). At a job setting, a human resource (HR) representative may define specifically what behaviors are appropriate and which behaviors are inappropriate. However, colleagues may act differently than what was described by the HR person. In order to fit in with colleagues, the individual needs to use observation and modeling to determine which behaviors will be acceptable. The explicit contract involved the HR person's description of the work environment. The implicit contract involved observation and modeling of colleagues and co-workers. Rubin stated that "implicit social contracts underlying much of social life are breaking down as the explicit contracts shift" (p. 7), suggesting direction teaching of social contracts is needed.

Rubin (1996) differentiated explicit versus implicit demands of society. Rubin suggested that explicit demands are those that are clearly related to consumers and employers while implicit demands are sort of hinted at. While individuals without disabilities tend to interpret implicit demands with little effort, individuals with ID must expend much effort and energy in the interpretation process (Rubin, 1996). That effort, Rubin suggested, was only expended when the individual with ID realized that the demands had changed. Socially implicit demands must be explicitly taught to youth with cognitive limitations. In fact, several researchers (Beale-Spencer, 2011; Benninga &

Quinn, 2011; Roberson, 2011) noted a need for explicit teaching of many skills historically learned implicitly. Educators, families, and other support people need to teach social skills explicitly and need to involve others who can support generalization to other settings (Serna, 1996). Most employees adjust to the shifts in social contracts as described by Rubin (1996); however, youth with ID or other high incidence disabilities may need explicit teaching in order to be successful.

Transition and the Community

Transition is not solely a school issue. This section describes the importance of connections between schools and businesses, community based resources, and formal and informal social support networks.

Roberson (2011) suggested a need for schools to support the 21st-Century changes essential to all individuals throughout the world. The use of technology has changed the skills necessary for many jobs. Roberson stated that critical thinking and problem solving, effective communication, collaboration and team building, and creativity and innovation "should be the end result of a student's time in school. They should not be skills and behaviors left to be learned after the student has entered the real world of work, though in the current reality, that is usually the case" (p. 891). Wehman (1992) posited that school based transition programs need local community input and coordination with business and service agencies to be effective. Wehman (1992) found that students who experienced integrated education that was easily generalized into the community were more competent within the community. These students learned how to deal with social problems effectively and to access help within the community. Of promotion of

strategies that enhanced transition into adulthood, Wehman (1992) recommended that families and professionals take a look at all youth in the country and the available employment opportunities that lead to successful integration into adult roles.

Business. The relationship between the local school and the community needs to be examined. The community sets the context for the outcomes and content taught within the school. The community determines the socially appropriate adult roles. Business can help determine the marketability of curriculum, provide sites to practice learned skills, and provide successful job placements for youth with and without disabilities (Beale-Spencer, 2011; Benninga & Quinn, 2011; Roberson, 2011; Wehman, 2013). Formal, structured linkages between the school curriculum and the surrounding community will establish an employment pipeline that adjusts to the specific needs of the business community (Wehman, 2013).

Additionally, such a formal linkage will benefit all youth. Functional, real life, community based experiences are necessary for successful adult outcomes (Wehman, 2013). Researchers have found strong evidence that employment and work experiences while in high school relate significantly to positive adult outcomes, including employment and community functioning (Beale-Spencer, 2011; Benninga & Quinn, 2011; Roberson, 2011; Wehman, 2013).

Community based resources. While there are advantages for providing connections to business and community based experiences, transition needs the support of adult resources as well. Education needs to evolve to meet the demands of the community in which it exists. Collaboration between and among adult service providers

is vital (Roberson, 2011). Resources found within the community include health care providers, financial planners and experts, police, fire department, city offices and personnel, utility providers, private businesses, local government entities, and many more. A comprehensive list of these resources varies by city, state, and population characteristics. Formal resources tend to be government-related or paid services.

Wehman (2013) stated that no agency has the resources and funds available to provide transition services for every youth. Additionally, no agency could possibly know all of the resources of all of the adult services available within the community, suggested Wehman (2013).

Support networks. Supports available to youth as they transition to adult roles vary depending on the roles the individual chooses; however, "(a)ll youth…need help to develop an identity of social resourcefulness and sense of self as an important civic actor" (Beale-Spencer, 2011, p. 66). Natural supports within employment settings include human resource staff, job trainers or coaches for new employees, and veteran colleagues. While some of the tasks completed by these support personnel are explicitly taught (e.g., leave and benefits description by HR staff, specific procedures for starting and ending the work day), many are informally taught by co-workers (i.e., lunch break, customer interactions). Other supports might include federally supported programs available to all like Job Services (Beale-Spencer, 2011; Rubin, 1996).

Friends and family are invaluable to transition success (Wehman, 2013). As youth move from high school to adult roles, family and friends provide modeled behaviors, assist youth in accessing resources within the community, interpret stimuli in

multiple settings and identify appropriate behaviors based on those stimuli (Beale-Spencer, 2011; Halpern, 1992; Kohler, 1993; Kohler & Field, 2003; Wehman, 1992). Additionally, friends and family can assist youth to learn civic rights and responsibilities (Benninga & Quinn, 2011; Gonzales, 2011).

Unfortunately, Van Naarden Braun, Yeargin-Allsopp, and Lollar (2006) found that youth who use vocational services during the transition to adult roles were less likely to be employed. They found that 14% of youth with severe intellectual disabilities were competitively employed, concluding that "given adequate support systems, competitive employment may be a realistic goal for some young adults with severe [intellectual disabilities]" (Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006, p. 925). Such employment can assist in changing the value described by Beale-Spencer (2011) as a "drain on society" (p. 65).

The Logic Model

The logic model can be found in Table 1. The inputs provided in this study included research staff, time, and video chatting application on a hand-held device such as an iPad mini, iPod, smart phone, or other such device. The timeline is found in Figure 1. Two weeks were designated for a third party to teach the participant to initiate and respond to initiations from peers in natural environments. Direct instruction in a separate environment was used. It was recommended that the sessions included teaching the participant and the support person to use video chatting to support appropriate social interactions in natural environments. With such instruction, participants would demonstrate appropriate initiation and response to initiations of interactions with peers.

Generalization into natural environments required additional supports, in this case use of video chatting with a trusted support person. Video chatting allowed the support person to provide cues and support from a distance, reducing the potential stigma associated with live support by a teacher, job coach, or other adult provider. The short term outcome or impact was hoped to be improved social communication skills in natural environments with peers. This was addressed by the current study. Longer term outcomes that might be demonstrated in a longitudinal study may include repeated inclusion in socialization and adult social role integration. However, these were not addressed by the current study.

Summary

Public schools are tasked with educating all youth (Dewey, 1915; Roberson, 2011; US DOE, 1991). The goal of education is to prepare youth to be contributing members of a civic society (Dewey, 1902; 1915; Peraino, 1992; Powers, 1996; Roberson, 2011; Wehmeyer, 1996). Youth with intellectual disabilities transition into the same adult social roles with the same expectations (Halpern, 1994; Deci, Vallerand, Pelletier, & Ryan, 1991; Gonzales, 2011).

Technology is prominent in United States living, learning, and working settings with multiple purposes (Roberson, 2011; Wehman, 2013). Research suggests that technology can support youth with intellectual disabilities (Davies, 2011; Davies, Stock, & Wehmeyer, 2003; Davies, Stock, & Wehmeyer, 2004; Dicianno, Bellin, & Zabel, 2009; Dutta, Schiro-Giest, & Kundu, 2009; Freeland, Emerson, Curtis, & Fogarty, 2010; Hamm& Mirenda, 2006; Kelly & Smith, 2008; McDonnal & Crudden, 2009; McNamee,

Table 2.

Logic Model

Inputs	**Outputs**		**Outcomes-Impact**		
	Activities	Participation	Short	Medium	Long
LSW staff time iPad mini or iPod touch (as preferred by youth with ID and support person)	Teach (LSW/PhD counselor) • Appropriate initiation of interaction • Appropriate response to interaction initiated by peer • Use of video chat • Disseminate iPad mini/ iPod touch to participants and support personnel at no additional cost to them	Increase quantity and quality of initiations Increase quantity and quantity of responses to interactions by peers	Improved skills in social communication	Repeated inclusion in socialization	Adult social role inte-gration

Walker, Cifu, & Wehman, 2009; Myers, 2007; Specht, Howell, & Young, 2007; Webb, Patterson, Syverud, & Seabrooks-Blackmore, 2008; Wehman, Gentry, West, & Arango-Lasprilla, 2009) but is not used at the same rate for this population (Davies, Stock & Wehmeyer, 2003; 2004; Gentry, Kvarfordt, & Lynch, 2010; Parker & Banerjee, 2007; Specht, Howell, & Young, 2007; Stock, Davies, Wehmeyer, & Palmer, 2008; Wehman, 2013; Wehman, Gentry, West, & Arango-Lasprilla, 2009). Technology can level the playing field in adult roles (Wehman, 2013). Research exists on adapted or modified technology used to support individuals with disabilities (Davies, 2011; Davies, Stock, & Wehmeyer, 2003; 2004; Stock, Davies, Wehmeyer, & Palmer, 2008; Wehman, Gentry, West, & Arango-Lasprilla, 2009); however, little research exists on the use of commonly available hand-held technologies to support the functioning of youth with intellectual disabilities.

The current study adds to the research base in determining the efficacy of using common hand-held technologies for use by one person with an ID to support social interactions, employment, greater independence in social interactions, and social acceptance by peers with and without disabilities. The results may support a change in roles for adult paid support persons as well.

Chapter 3: Research Method

The research question in the study asked how video chatting on common hand-held devices supported the social/interpersonal skills of transition-age youth with intellectual disabilities at work and social settings. The hypotheses for the study were as follows:

$H1_0$: Use of video chatting on a common hand-held device will have no impact on frequency of initiation of interactions in adult social roles of youth with ID as measured by direct observation of transition-age youth with developmental disabilities in these settings.

$H1_1$: Use of video chatting on a common hand-held device will increase the frequency of initiation of interactions in adult social roles of youth with ID as measured by the direct observation of transition-age youth with ID in these settings.

$H2_0$: Use of video chatting on a common hand-held device will have no impact on proficiency of acceptable social interactions as measured by direct observations in natural environments.

$H2_1$: Use of video chatting on a common hand-held device will increase the proficiency of acceptable social interactions as measured by direct observations in natural environments.

Single-Case Research Design

Design/Approach

Single-subject research design has been characterized as the classic model of conducting quantitative research in psychology and behavioral sciences (Creswell, 2009;

Drew, Hardman, & Hosp, 2008; Johnson & Christensen, 2008; O'Neill, McDonnell, Billingsley, & Jenson, 2011). It is used to investigate the relationships between independent and dependent variables. Single-subject research design is used when the population of participants is low, such as for individuals with low incidence disabilities, when ethical issues arise when withholding treatment from a group, or when the statistics used to answer research question are not specific to individual participants and the researcher is interested in such information (O'Neill et al., 2011). Although a control group is not used in single-subject research, replication of baseline and intervention conditions provides the control needed for the study to contribute to the evidence base required for educational value (Creswell, 2009; Drew, Hardman, & Hosp, 2008; Johnson & Christensen, 2008; O'Neill et al., 2011).

Implementation of single-subject research design requires effort upfront. It is critical that the variable to be measured and how it is going to be measured be operationally defined (Creswell, 2009; O'Neill et al., 2011). The behavior to be measured must be objective, clear, and complete in order to ensure the measurement of behavior is accurate. It is also vital to the implementation of the intervention or what is known as "intervention fidelity" (O'Neill et al., 2011, p. 34). While an operational definition helps to create a well-designed study, it also is necessary for other researchers to make their conclusions and to replicate the study. Appendix C provides a process for defining the target behavior for this study as well as a scoring rubric for how demonstration was recorded.

Single-subject research design involves a small number of participants, repeated measures over time, graphing and visual analysis of data, and established integrity of the interdependent variable(s). Rarely, however, do educators have the opportunity or means by which to accomplish single-subject research while actively teaching a class of multiple students (Creswell, 2009; Johnson & Christensen, 2008; O'Neill et al., 2011).

Single-subject design entails one participant who demonstrates an initial set of behaviors, known as baseline or Phase A. Once those behaviors are stabilized, the researcher introduces an intervention. Data collection continues through this second phase, known as intervention, treatment, or Phase B. To ensure that a change in behavior is truly the result of the intervention, the intervention is removed and data are collected in a return to baseline, a return to Phase A (Creswell, 2009; Johnson & Christensen, 2008; O'Neill, McDonnell, Billingsley, & Jenson, 2011). In a true experimental design, the intervention is then reinstated and data are recorded. This ABAB format allows the researcher multiple opportunities to view the participant's demonstration of behaviors at baseline and the same number of opportunities to view the behaviors with the intervention. In this instance, the initial baseline data serves as the control group data for the single subject (Johnson & Christensen, 2008; O'Neill, McDonnell, Billingsley, & Jenson, 2011).

A variation of the single subject design is a single-case multiple baseline design . A multiple baseline single-case design may have two different looks. First, a multiple baseline may entail a single subject in multiple settings in which data collected in each new setting becomes a new baseline (O'Neill, McDonnell, Billingsley, & Jenson, 2011).

For example, a student may demonstrate choice making in the classroom for the initial set of baseline data. Once the intervention has been implemented and a trend established, the researcher collects data on choice making in the cafeteria. The study would then follow the same process of data collection for baseline, treatment intervention (O'Neill, McDonnell, Billingsley, & Jenson, 2011). O'Neill et al. (2011) indicated that single-case design allows the researcher to make changes as needed to improve the intervention at specified phase change points and document those changes to meet the needs of the participant as well as the study.

Yet another multiple baseline model might involve more than one subject within similar settings (Creswell, 2009; Drew, Hardman, & Hosp, 2008; Johnson & Christensen, 2008; O'Neill et al., 2011). In this instance, baseline data are collected for each participant. Then, treatment or intervention is implemented for one subject while data collection continues for the others (Creswell, 2009; O'Neil et al., 2011). At another designated time, treatment or intervention is implemented for the next participant.

For the current study, multiple participants (n = 3) were observed in natural environments (i.e., baseline data collection) until a trend in the target behavior was found. Then, participants engaged in social skills education through social skills instruction provided by a third party from which the participants were recruited. It was recommended that the instruction involved learning skills in appropriately initiating or responding to initiations made by others in adult social roles with support provided by a trained adult using video chatting or modeling of social intreactions on commonly available hand-held technologies. This learning was taught by a licensed social worker

through an already established social skills instruction session. The baseline data collection began for all participants at the same time. Intervention (i.e., support provided via video chatting using hand-held devices) was introduced for all first participants at the same time and with instruction provided by the same licensed social worker. while baseline data collection will continue for the remaining participants. Follow-up data was collected over four observation sessions or until a trend was established in the same natural environments in which baseline data were collected.

Threats to validity with a single subject multiple baseline research design exist. Internal validity is established through sound experimental control. The control in this case involved clearly defining operational terms and structures. Fidelity of data collection and intervention implementation are also required. Through clearly defining the intervention, the possibility of replication increases and allows for greater validity of the study itself. The current study employed data collection by the researcher. It was recommended that learning sessions specifically taught the participants to initiate and respond to initiations by peers as well as how to use video chatting and video modeling on the hand-held device preferred by the participants or provided by the researcher at no cost to the participants or their support personnel.

External validity additionally is threatened in a single subject multiple participant research design. These threats are minimized by "1) providing a rich and detailed description of the setting and intervention, 2) detailing the measures, and 3) generalizing the results to a particular theory" (Barger-Anderson, Domaracki, Kearnery-Vakulick, & Kubina, 2004, p. 220). The logic model (see Table 1) showed the progression of inputs,

outputs, and outcomes that fit within the theoretical framework of self-determination, social learning, ecological systems, and quality of life. The ability of another researcher to replicate the study provides for generalization to other subjects in similar situations and with similar characteristics will provide evidence for the external validity of this study, though in and of itself, the study can only be generalized to the specific region and setting in which the study took place and with participants that resemble this study's participants.

Setting

Natural supports exist throughout the community. In fact, the real world provides supports naturally through existing employment training of new hires, procedures for requesting assistance and learning to navigate the community, and the use of mentors to support expected behavior and to model appropriate actions.

Following recruitment and consent to participate, participants worked with the researcher and his or her support persons (i.e., parent or guardian, job coach) if appropriate to identify the natural environment in which the study took place. The setting was community based, a setting in which the individual currently participated with support from a job coach, direct service provider, or paraprofessional, and required the participant to demonstrate frequent age appropriate adult social interactions such as employment, education, recreation, or others identified adult social roles. In other words, the setting was observation rich so that the behavior can be readily observed. Baseline data collection involved four observations in the natural environment identified above. I

was located on the periphery of the environment in order to observe without direct interaction.

Following baseline data collection, the participants received direct instruction from a licensed social worker in a local psychologists' office. It was recommended by the social worker that distractions be limited in this setting. It was also recommended that a minimum of four learning sessions in this setting be completed before generalizing to natural environments with video chat and video modeling support. Data were collected throughout instruction in the identified environment at the same rate as baseline data collection. Following direct instruction, data continued to be collected in the natural environment identified above in collaboration with the participant for a minimum of four direct observations or until a trend was established.

Sample

The population from which the sample was selected included transition-age youth with intellectual disabilities in a rural area. The sample was three transition-age youths with ID who participated in social skills instruction from a licensed social worker in her social skills class. Recruitment involved distribution of a flyer (see Appendix A) through the existing social skills providers who work with adult clients with disabilities. Consent for participation was obtained from the participant. The participants had to meet the following eligibility requirements:

- Have a documented intellectual disability.
- Be between the age of 18 and 25 years.
- Live and participate in identified community or surrounding towns.

- Be available to participate in four learning sessions in a week.
- Be observed in adult social roles during scheduled observation times (approximately 6-8 weeks).
- Not currently use video chat or video modeling to support social inclusion in any setting.
- Not be a past, present, or potential future student of my local public school programming class.

Data Collection

Data collection was done in multiple stages. Refer to Figure 1 for the timeline. First, the participants and I identified the natural locations in which initiation of conversation and response to initiations made by peers were to be demonstrated. The researcher observed the individual in the natural environment and developed quality indicators based on the context in the natural environment. In other words, behaviors were deemed appropriate based on the behaviors of others in the natural environment and in conversation with individuals within that environment. These individuals included peers without identified disabilities, employment supervisors at the place of employment (i.e., those employed by the business), and customers as appropriate. For example, in an employment setting, it may be appropriate for an individual to make jokes while working in a warehouse setting but the same behavior would not be appropriate on a sales floor. The environment was considered when determining the appropriateness of the interaction. General guidelines are included in Appendix C but were only guidelines and accounted for the culture of the environment to determine appropriateness of interactions.

Next, I collected data on the frequency of the participants' opportunities to initiate and respond to interactions and actual implementation of the skill in observation-rich areas through direct observation (Creswell, 2009; Drew, Hardman, & Hosp, 2008; Johnson & Christensen, 2008). I collected data during four 30-minute observation sessions or until a baseline was established. Note that the timeline allowed for 2 weeks of baseline observation prior to intervention. In the event that a trend was established, the timeline was shortened. Through observation of behaviors demonstrated by peers within natural environments, appropriateness of social interactions was established and used to determine minimal level of quality of initiations and responses to initiations made by peers. Following establishment of a baseline trend, treatment began. A staggered start for the intervention phases was proposed but was not necessary due to individual schedules within the community (Johnson & Christensen, 2008).

Treatment fidelity. The following treatment fidelity procedure was recommended for learning sessions. The licensed social worker established teaching guidelines for the learning sessions. Documentation of treatment fidelity was necessary, and regular assessment of treatement fidelity occurred. Experienced support personnel were trained on how to provide verbal and visual cues to support participants to interact appropriately in adult social roles. In addition, a treatment fidelity checklist similar to the one created by McDonnell, Johnson, and McQuivey (2008) was offered to the instructor and suggested it be used. Figure 2 provides the suggested fidelity checklist developed and adapted to this study. Treatment fidelity was suggested to be assessed in at least 25% to 30% of the intervention sessions.

Participant	Date				
Interventionist	Setting				
Trial	1	2	3	4	5
Step					
1) Review appropriate interaction prior to entering social environment					
2) Review use of video chat w/ participant					
3) Place self 50 feet away from direct social environment					
4) Answer video chat request made by participant OR Make video chat request of participant					
5) Provide identified verbal cue					
6) Provide identified visual cue					
7) Provide immediate feedback via video chat					
Percent correct (Total correct steps/Total steps X 100)					

*Figure 2.*Treatment fidelity checklist.

The participants took part in four 30-minute learning sessions over 2 weeks (14 days) in which they learned to initiate and respond appropriately to interactions initiated by peers with quality of interactions based on observation of peers in natural enviornments. It was suggested that participants learn specific phrases to initiate interactions, appropriate verbal responses to interactions initiated by peers, body

language that communicates appropriate interactions, and ways to ask for assistance from support persons to initiate or respond to initiations by peers. The learning sessions were also used to teach the use of video chatting and video modeling. I provided the technology for video chatting/modeling at no cost to participants or trained adult support persons.

I invited trained adult support persons to participate in the learning sessions; these were individuals who had interacted with the participants using hand-held technology found commonly within the local community to provide social support to the individuals in the natural environments. I recommended that the trained adult support person participate in learning sessions to ensure adequate use of cues to support the participant in adult social roles specifically related to initiation of and response to initiations by peers. They were to be provided cues and learning opportunities for demonstrating verbal and visual cues to support the participant. It was recommended that these adult providers demonstrate 90% accuracy in use of verbal and visual cues to support the individual prior to treatment implementation in the natural settings.

Data collection included documentation of observations specific to the natural envirnoments. The data collection form found in Appendix B was used with direct observation occurring in identified settings (i.e., work, school, independent living environments, and community-based settings). The form defined the environment (i.e., setting, number of people, roles of each individual interacting with the participant, time of day), the opportunities to initiate interactions with peers, and frequency of performance of the skill. In addition, the form provided space to record initiations by

peers and responses made by the participant. Definition of the target behavior and standards required for determining appropriateness of interactions provided validation of the adequacy of the form to collect such data in identified environments. In other words, the clarity of the definition of the target behavior to be observed and the standards by which appropriateness of interactions to be measured as well as agreement on data recording made it known that the data collection form was a valid measure of the variables.

Following instructional sessions, I collected data on frequency of demonstration of initiation of and response to interactions. Using the data collection form found in Appendix B, I recorded frequency of demonstration of initiation or response to initiation from peers as well as quality of the interaction based on quality indicators determined prior to instruction. Quality was based on appropriateness as observed within social environments.

Data Analysis

Data analysis involved charting the frequency of demonstration of appropriate social skills in natural settings. Data were charted on frequency of initiation of social interactions in adult social settings, responses to social interactions by peers in those same settings, and the frequency of meeting the quality indicators defined by observation within the identified natural environments. A sample chart is found in Figure 3. Percent of actual initiations divided by opportunities for initiations of interactions times 100 were charted as percentages for each session and were labeled as a data point in the chart.

Time was recorded across the horizontal axis. A horizontal line identified the time at which intervention was implemented.

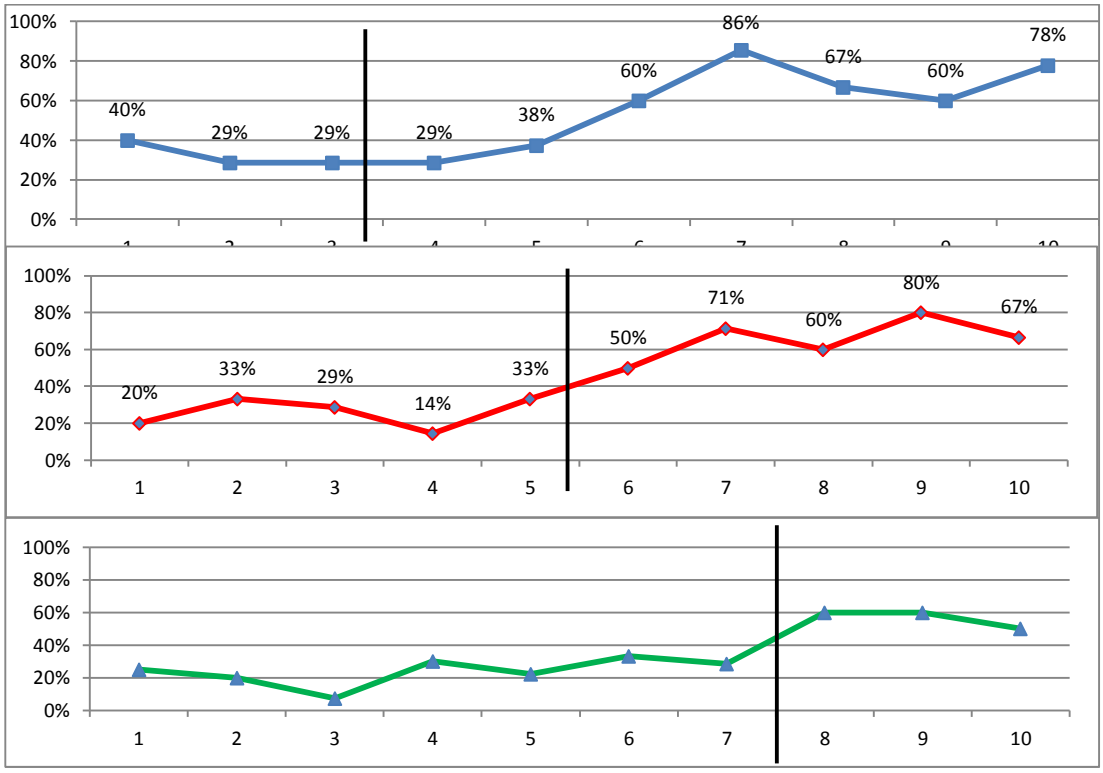

Figure 3. Sample single-case multiple-baseline design data chart showing visual representation of data.

Visual inspection was used to determine treatment effect should there be a great deal of variability in the data as was hypothesized (Johnson & Christensen, 2008). In addition, common statistical analyses were used. Parker, Hagan-Burke, and Vannest (2007) compared common statistical analyses including percent of nonoverlapping data (PND), regression, and a variation proposed by the authors, percent of all nonoverlappling data (PAND).

Regression analysis can be converted to a Cohen's *d* and an effect size can be calculated. Confidence interval can also be calculated. All data points in Phases A and B were considered. Regression analysis can also be expanded into complex analyses (Parker et al., 2007). Regression anaylsis has drawbacks as well. Parametric data assumptions of normality, equal variance, and serial independence are not met by single-case research. R^2 can be influence by extreme outliers. With a small data set, any outlier may have a significant impact on this value. Regression analysis of single-case research requires expertise to analyze and determine if assumptions have been met.

PND compares the single most extreme point in Phase A to percent of Phase B data that are more extreme. PND is acceptable to visual analyst in that it is fairly simple to calculate and it can be used with any single-case research design. Drawbacks to PND include inability to calculate an effect size, it's not related to accepted effect size calculations and requires its own interpretation by a skilled analyst. *P* values and confidence intervals cannot be calculated. Finally, Parker, Hagan-Burke, and Vannest (2007) noted that PND ignores all data except one extreme data point in Phase A.

Parker, Hagan-Burke, and Vannest (2007) proposed the use of percent of all non-overlapping data (PAND) that considers all data collected in both Phase A and B. It can be translated to Pearson's *Phi* and Phi^2 and effect size can be calculated. Using a 2 x 2 table with equal marginal proportions (Parker, Hagan-Burke, and Vannest, 2007), effect size was calculated. Data requirements are those for a "chi-square test with frequency data," specifically a minimum of 20 data points (Parker, Hagan-Burke, & Vannest, 2007, p. 196). Parametric requirements of equal variance and normality are not required. Serial

independence and the need for autocorrelation do not impact the results of a PAND calculation (Parker, Hagan-Burke, and Vannest, 2007).

Data analysis for this study involved calculations of all three of these with interpretation of results displayed in table format. PND and PAND are not sensitive to data sets that have no overlap. The regression statistic countered this limitation. Discussion was required to define the implications of the results of the visual analysis, regression statistic, percent of non-overlapping data, and percent of all non-overlapping data. Chapter 5 includes a discussion of these results.

Presentation of Results

As recommended by Creswell (2009), results were presented in the form of line graphs for baseline and treatment for participant initiation of interaction in multiple settings. The horizontal axis represents units of time while the vertical axis represents the frequency of the behavior. Behavior frequency is connected horizontally by lines (Creswell, 2009). Multiple graphs represent data collection in varying settings beginning with baseline data collection. Treatment was started simultaneously once a trend was identified.

Protection of Participant Rights

Youth and young adults with intellectual disabilities are members of a vulnerable population. This study aimed to protect the identity of the participant through the following actions. Selected participant received and were asked to sign a consent to participate document that included statements about the voluntary nature of the study, how participant was selected, and disclosure of the researcher's roles including doctoral

student and transition teacher. The consent was written in language that was clear and understandable by the participants and included the purpose of the study and study procedures. In addition, it was read and discussed with the participant and paraphrased as needed.

The study participants were informed of the anticipated timeline for data collection and his or her expected contributions to the research being conducted. Any risks or benefits were described in the consent to participate and were explained in detail to ensure participant understanding. The participant was informed that there was no compensation for participation and no additional costs were incurred for participating in the study. Confidentiality was maintained at all times. The introductory phase of the study involved discussion and definition of confidentiality and that it was expected of all participants and the researcher.

Once the consent to participate was discussed, the participant signed consent to participate. Each participant further identified a safe word that would indicate to the researcher that the participant did not wish to continue with the study. In addition, a contact name and number was provided to the researcher to serve as a contact should the participant need immediate assistance with mental or physical difficulties during the study.

Contact information for the researcher was provided so questions about the research could be answered. In addition, questions about participant rights were directed to a Walden University representative and contact information was provided. All information in the consent documents were written in a language that was clear to the

participants and their family members, guardian, or other support personnel as appropriate. See the Consent for Participation found in Appendix D. Assent to participate was also available but was not required due to legal age and lack of guardianship by other individuals. In addition, the support personnel, if appropriate, were to be asked to sign the Confidentiality Agreement found in Appendix E. However, each participant relied on natural supports within the environment from multiple supporters. Therefore, no one individual provided all support to the participant so technology was embedded in the natural environment.

At the conclusion of the study, the participant and his or her guardian, if appropriate, was presented with the results of the study. It was restated that any further questions could be directed to me, and my contact information was provided again at this time.

Data were kept in a locked file cabinet in my home office. Once entered into electronic form (i.e., Excel), the data were password protected on a secure travel drive that was also kept in the locked file cabinet. No access to the data was allowed by anyone but the researcher, research committee as appropriate, and the participant and his or her guardian as appropriate. Data will be kept for 5 years and destroyed at that time.

As noted above, the research took place in natural environments in which the participant already interacted. Direct instruction of initiation of interaction with support from the researcher took place in a the offices of the licensed social worker with generalization into social, employment, and independent living settings following the

above noted timelineThe study was conducted with approval from the Walden University Institutional Review Board, approval number 06-03-14-0071216

Summary

The study considered the participant's unique learning needs (Wehman, 1992; Wehmeyer, 2007) and incorporated social learning by using direct structured instruction with modeled initiations by a social skills instructional group taught by a licensed social worker (Bandura, 1977). The transfer from one setting to the next addressed the multiple settings in which the youth participates (Bronfrenbrenner, 1979) while considering the social needs of adults with and without disabilities as discussed in recent research. The participants were given the opportunity tolearn to use technology to assist in initiating interactions in preferred settings. The single-case design, although known for limitations in external validity and internal validity, has been found to be an effective way to conduct research in educational environments and with small samples available such as in special education. This study provided a look at the effectiveness of using video chat or video modeling with an iPad mini or iPod touch (at no cost to participant and trained support personnel) or with his or her preferred device to support social interactions in natural settings. Findings of the study are presented in Chapter 4 and a discussion of these results are presented in Chapter 5.

Chapter 4: Results

Participants

Three young adults with ID expressed interest in participating in the study. These three individuals were between the ages of 19 and 21 years. They all participated in a social skills development program taught by a licensed social worker. Each participant contacted the researcher and scheduled an initial meeting to discuss the study, the consent for participation document and required signature, and establish a schedule of observations that were to take place in adult social environments. The following table provides the information about each participant including age and description of the environment in which he or she preferred to be observed.

Table 3

Participant Description

	Age	Setting
Participant 1	21	Restaurant (work)
Participant 2	20	Settings varied
Participant 3	19	Cafeteria

Participant 1

Participant 1, hereafter referred to as P1, was a 21-year-old female. She lived in a residential training center where she studied culinary arts. P1 worked in a local restaurant, where she took orders from customers in person and via phone, prepared items for future orders, and completed cleaning tasks. The restaurant was her preferred setting in which she chose to be observed. P1 worked a 2.5 hour shift 4 days a week with a

supervisor, three to five coworkers, and a variety of customers. Her work involved taking call-in orders via phone, chopping and slicing vegetables, filling ranch containters, and cleaning the preparation area. She had opportunities to follow instructions from peers and supervisors, greet customers and ask them what they would like to order, and socially converse with employees and customers. These were the same opportunities afforded to all employees during P1's shift.

Participant 2

Participant 2, hereafter referred to as P2, was a 20-year-old young man. Like P1, he lived in a residential training center, where he studied facilities maintenance. P2 chose two different environments in which to be studied, the recreation center and the cafeteria at the residential center. In the recreation center, P2 had opportunities to interact with seven to ten peers while watching a movie on television. In the cafeteria, P2 wiped tables, mopped the floor, and cleaned machinery. He had interaction opportunities with three supervisors and two peers.

Participant 3

Participant 3, hereafter referred to as P3, was a 19-year-old young woman. She also lived in a residential training center, where she studied culinary arts. P3 chose to be observed in the cafeteria. P3 had opportunities to interact with peers while waiting in line, making meal choices by interacting with kitchen staff, interacting with peers while dining, and talking with peers and staff while clearing her table.

Research Question and Hypothesis Testing

This section restates the research question, null and alternative hypotheses, and data gathered from direct observation.

The research question in the study asked how video chatting on common hand-held devices supported the social/interpersonal skills of transition-age youth with intellectual disabilities at work and social settings. The hypotheses for the study were as follows:

$H1_0$: Use of video chatting on a common hand-held device will have no impact on frequency of initiation of interactions in adult social roles of youth with ID as measured by direct observation of transition-age youth with developmental disabilities in these settings.

$H1_1$: Use of video chatting on a common hand-held device will increase the frequency of initiation of interactions in adult social roles of youth with ID as measured by the direct observation of transition-age youth with ID in these settings.

$H2_0$: Use of video chatting on a common hand-held device will have no impact on proficiency of acceptable social interactions as measured by direct observations in natural environments.

$H2_1$: Use of video chatting on a common hand-held device will increase the proficiency of acceptable social interactions as measured by direct observations in natural environments.

Data Collection

The data collection form (see Appendix B) was used to identify the location in which the observations occurred, number of peers, supervisors, customers, and support staff in the environment, opportunities to interact with one or more of those individuals, actual interactions initiated by the participant and to which the participant responded. Tally marks were placed into the boxes on the data collection sheet for "actual" and "opportunities" in both sections (i.e., "initiations" and "responses"). The number zero (0) was recorded in the "actual" column when a participant missed an opportunity to initiate or respond to interactions. When more than one opportunity was offered, multiple tally marks were recorded in the appropriate boxes.

The beginning letter of each individual in the environment was recorded in the "who" column (i.e., peer = p; supervisor = s; customers = c; support staff = ss). A number was recorded to denote that more than one person in a specific category was present (e.g., P1, P2, P3 for Peer 1, Peer 2, and Peer 3, respectively). When multiple opportunities were presented, the beginning letter of the category was recorded followed by a slash mark. Following the slash, the next beginning letter of the category was recorded, and so on.

When an observed activity did not require initiations or responses, a note was written across the minute in which the activity took place. For example, "chopping onions" did not require interaction. Although the task "chopping onions" was a response to a supervisor's directions, it was only marked as an actual response in the minute in which the response was made.

A number was recorded in the Quality column to indicate the quality of each interaction. The quality rubric can be seen in Appendix C. In the instance that no initiation or response was demonstrated, a zero (0) was recorded in the quality column. All other entries in this column followed the rubric. In the event that a minute produced more than one opportunity, additional numbers were recorded in the same box with the same coding.

Observations took place in settings chosen by the participants in 30 minute sessions. Four observations were conducted for baseline data collection for each participant. Following baseline data collection, the participants took part in social skills training sessions offered by a local licensed social worker on initiating interactions, responding to initiations by others, and using technology for support in socially appropriate adult social roles. Upon completion of the learning sessions, the participants contacted the researcher to indicate he or she completed the learning sessions. Follow-up or treatment data was collected for an additional four observations for each participant.

Testing Study Hypothesis 1

$H1_0$: Use of video chatting on a common hand-held device will have no impact on frequency of initiation of interactions in adult social roles of youth with ID as measured by direct observation of transition-age youth with developmental disabilities in these settings.

$H1_1$: Use of video chatting on a common hand-held device will increase the frequency of initiation of interactions in adult social roles of youth with ID as measured by the direct observation of transition-age youth with ID in these settings.

In order to determine whether the intervention of teaching age-appropriate social skills, specifically initiating or responding to interactions by others in adult social roles, baseline data was compared to treatment data that took place after the learning sessions with the licensed social worker. Visual analysis was used to determine if there was an obvious change from baseline to treatment data collection.

Each participant identified the type of hand-held electronic device that was comfortable for him or her. Smart phones were chosen and used by all three participants. Specifically, participants used smart phones for texting peers and support personnel. For example, P1 texted a support provider to pick her up from work when she finished her shift. However, in this study, each participant chose not to use video chatting on hand-held device while being observed. Although the use of video chatting was not observed, the number of opportunities and actual interactions or responses to initiations by others was recorded. Figures 4 to 6 show the percent of initiations and responses to initiations for each participant respectively.

Chapter 3 provided a description of the anaylsis strategy in full. This section provides the results of the analyses. Visual analysis of data showed that each participant had higher rates of interaction when the interaction was started by another. Although P2's baseline data was indistinguishable, the treatment data showed clear distinction in the rate of interactions. P3's response rate fell after the first observation; however, it increased over the whole course of observation. All three participants' increased levels of initiations and responses to others' initiation of responses from a visual perspective.

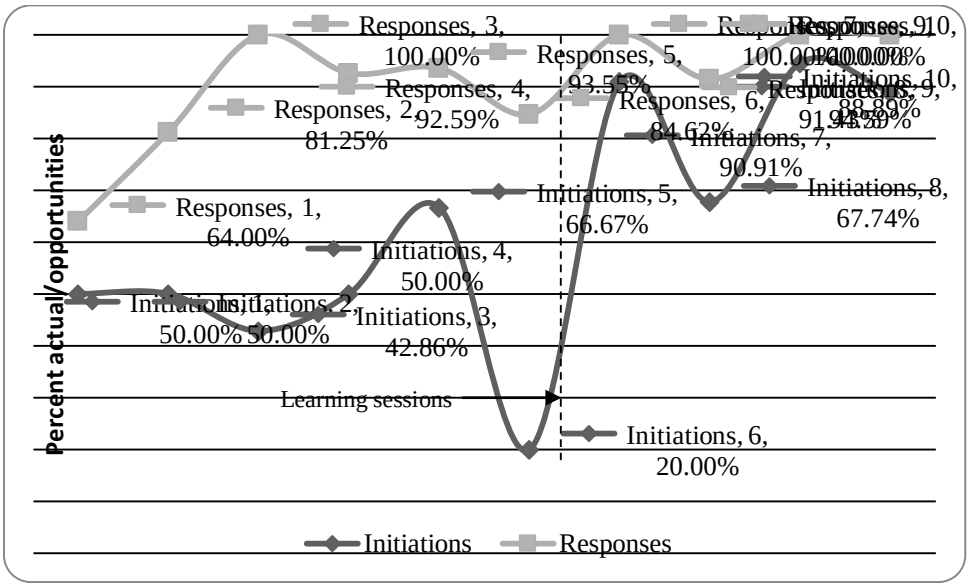

Figure 4. P1's initiations/responses across observations.

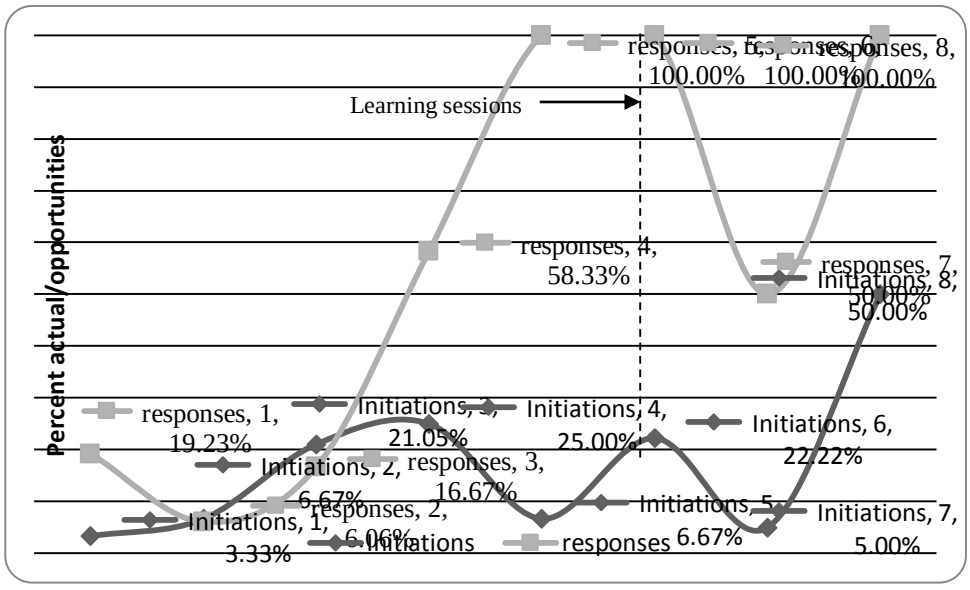

Figure 5. P2's initiations/responses across observations.

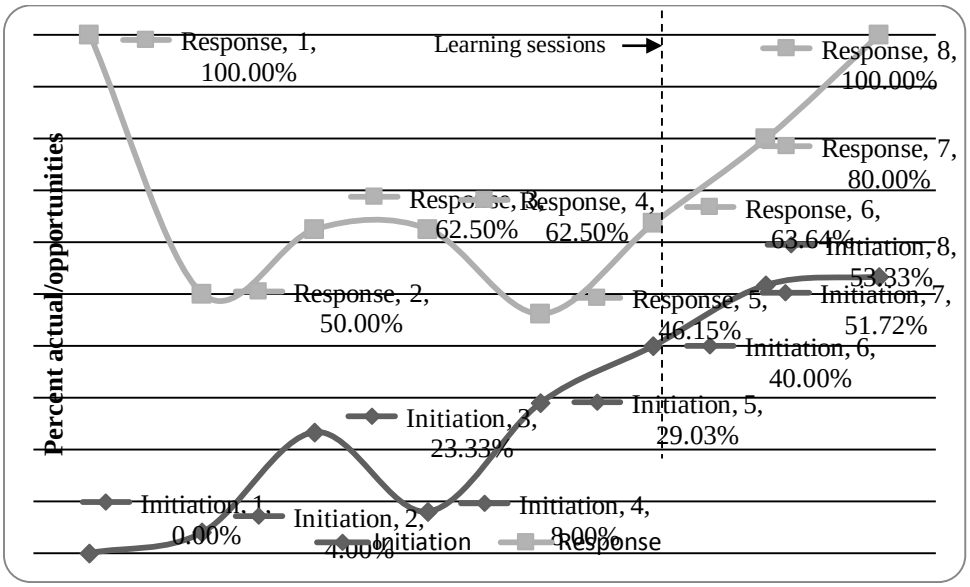

Figure 6. P3's initiations/responses across observations.

Percent of nonoverlapping data. Calculations of effect size were conducted. Results are displayed in Table 2. Percent of nonoverlapping data found the treatment to be moderately effective for P1's initiations at 83.33%. Due to an extreme outlier, her responses were negative 50%. When the outlier is removed, her effect was moderate with 89% overlapping. P2's effect size was minimally effective at 25% nonoverlapping data for initiations of interactions while his responses to others' initiations of interactions had a moderate effect size at 75%. P3's data found a highly effective treatment with 100% nonoverlapping data for initiations. Her responses to others' initiations of interactions were skewed by her 100% data point for the first observation. This data point resulted in a negative 75% of nonoverlapping data. Exluding that initial data point, her percent of nonoverlapping data was 33%.

Table 4

Percent of Nonoverlapping Data

Participant	Initiations	Responses
P1	83.33	50.00*
P2	25.00	75.00
P3	100.00	75.00*

Note: Percent was negative due to extreme data point in baseline.

Percent of all nonoverlapping data. In order to use all data points rather than just the highest baseline point, percent of all nonoverlapping data was calculated (see Table 3). The effect size for the treatment for P1's initiations was minimally effective at 60% while treatment was moderately effective for her responses to initiations made by others at 80% of all non-overlapping data. Intervention for P2 was moderately effective for initiations at 75% while his responses to others' initiations was effective at 87.5%. Finally, intervention for P3 was highly effective at 100% of all non-overlapping data for initiations made by her and was minimally effective for responses to others' initiations of interactions at 62.5% of all non-overlapping data. Due to the limited number of data points for each participant, regression analysis was not used.

Testing Study Hypothesis 2

$H2_0$: Use of video chatting on a common hand-held device will have no impact on proficiency of acceptable social interactions as measured by direct observations in natural environments.

Table 5

Percent of all Nonoverlapping Data

Participant	Initiations	Responses
P1	60.00	80.00
P2	75.00	87.50
P3	100.00	62.50

$H2_1$: Use of video chatting on a common hand-held device will increase the proficiency of acceptable social interactions as measured by direct observations in natural environments.

To determine the level of proficiency of acceptable social interactions, a rating scale was used (see Appendix C). Interactions were rated on a scale of zero (0) to three with zero being inappropriate and three being appropriate to the environment. Each participant's initiations and responses are represented in the following paragraphs with figures to support the discussion. If no interaction was made with one of those categories, it is noted in the text and there is no figure.

Participant 1. Figure 7 shows P1's initiations with peers during baseline and treatment observations. Over half (50.72%) of P1's opportunities were rated zero (0) before intervention with less than half (44.93%) were rated three (3). Following intervention, P1's quality of initiation improved with a reduction (20.00%) in observed initiations rated zero (0) and an increase (60.67%) in observed initiations rated three (3). A decrease in lower level quality with an increase in higher quality provides support for rejecting the null hypothesis.

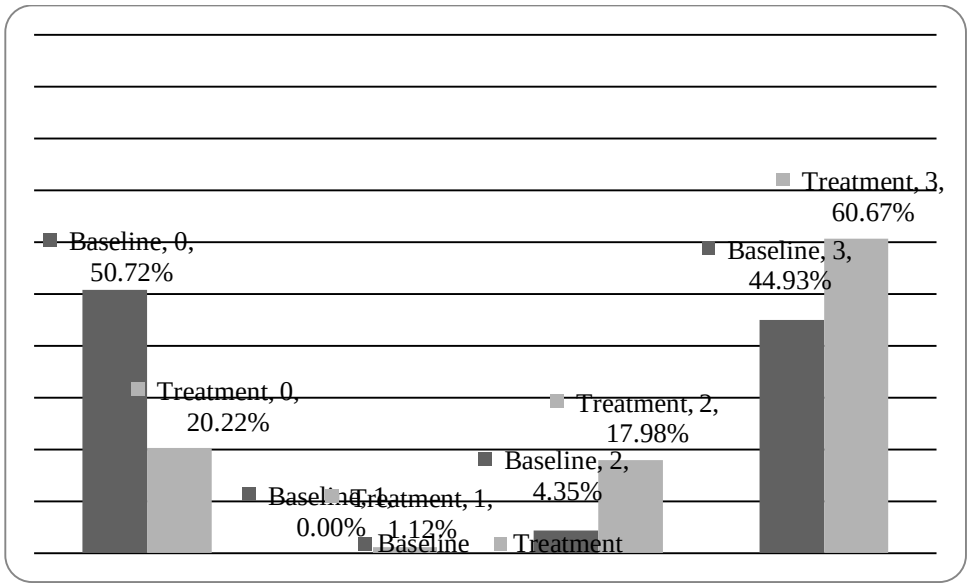

Figure 7. P1's quality of initiations with peers.

During baseline data collection, P1 demonstrated level zero (0) responses to peer initiations one-fourth (25.43%) of the time while level three (3) responses were recorded over half (55.32%) of the time (see figure 8). Following treatment, P1 decreased (8.97%) her level zero (0) responses and increased (64.10%) her level three (3) responses. Again, lower quality initiations decreased while higher quality initiations increased, providing evidence to reject the null hypothesis.

P1's interactions with supervisors is shown in figure 9. During baseline observation, initiations rated zero (0) were demonstrated three-fourths of the time. Level three (3) initiations were demonstrated one-fourth of all initiations with supervisors. Following treatment, P1 demonstrated a reduction of zero level initiations (16.67%) with supervisors and an increase in level three (3) initiations (72.22%). Once again, this pattern provides evidence enough to reject the null hypothesis.

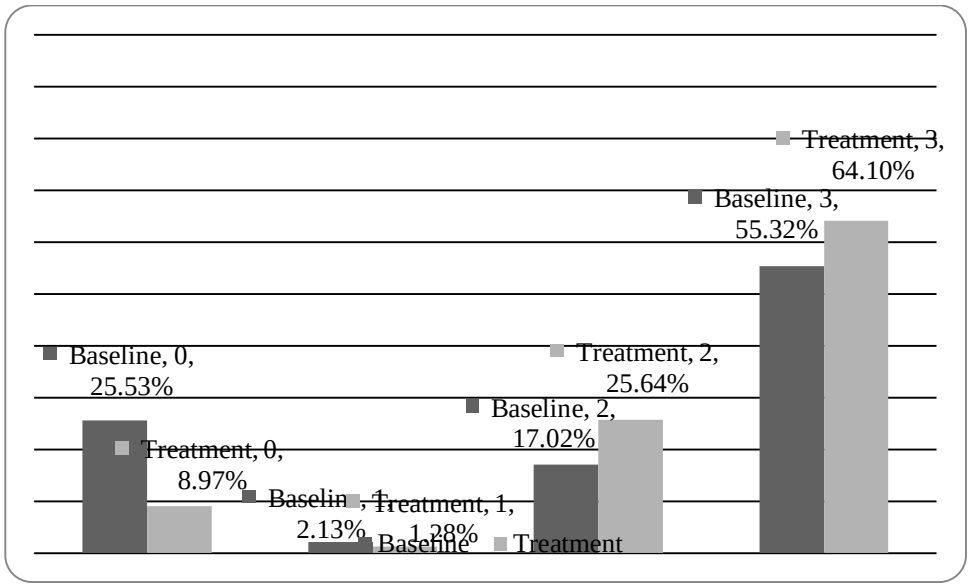

Figure 8. P1's quality of responses to interactions from peers.

Figure 10 shows that P1's level zero (0) responses to supervisors' interactions occurred in twenty percent (20.00%) of observed interactions while level three (3) responses were recorded at four-tenths (40.00%) of observed responses. Following treatment, level zero (0) responses decreased (0.00%) and level three (3) responses increased (81.13%).

P1 interacted with customers as well. See figure 11. During baseline observation, initiations rated zero (0) were recorded at just over one-tenth (11.11%) of observations and level three (3) initiations for two-thirds (66.67%) of observations. Following treatment, however, her initiations with customers at the zero (0) level increased to 45.45 percent while level three (3) initiations decreased to 36.36 percent. P1 did not have any interactions with support staff or people who had a different role in her chosen environments.

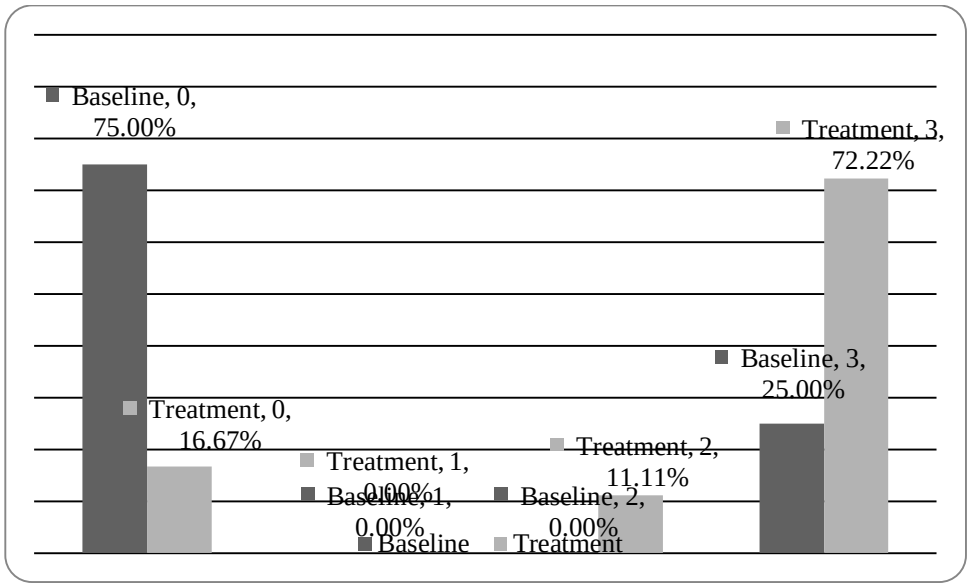

Figure 9. P1's quality of initiations with supervisors.

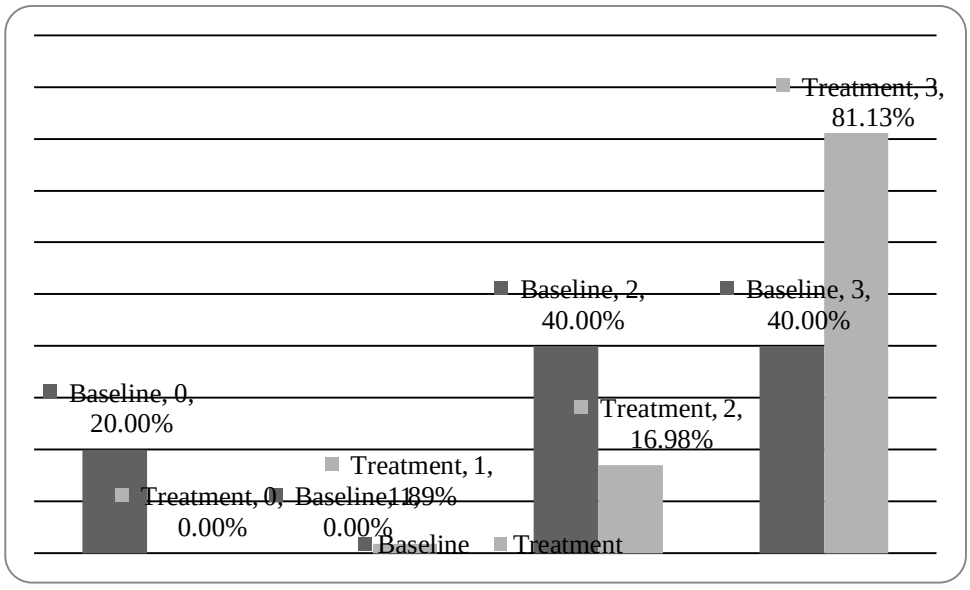

Figure 10. P1's quality of responses to interactions from supervisors.

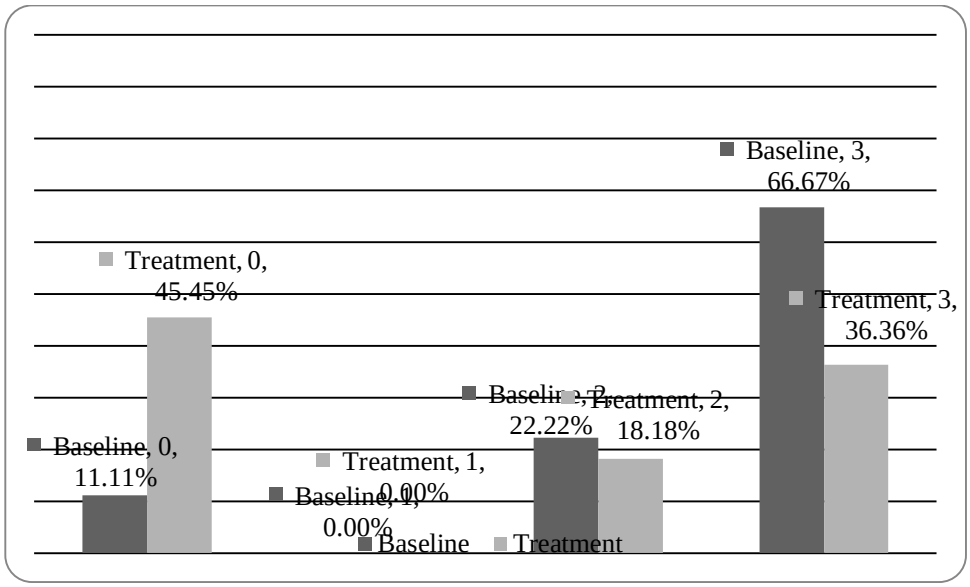

Figure 11. P1's quality of initiations with customers.

P1 also responded to initiations from customers (Figure 12). During baseline observation, she interacted with customers at zero percent (0.00%) level zero (0) and level three (3) most of the time (93.33%). Following treatment, lower levels of quality of responses increased while level three (3) responses dropped to 79.31 percent. These data indicate the opposite effect, which provides evidence enough to fail to reject the null hypothesis.

Participant two. P2's quality of interactions is recorded in the following figures. Initiation of interactions with peers during baseline data collection were rated level zero (0) for 70.33 percent of interactions with level three (3) interactions for one-fourth of observed initiations with peers (see figure 13). After treatement, P2's quality of initiations with peers at level zero (0) increased to 91.86 percent with level three (3) initiations decreasing to less than one tenth for observed initiations (8.14%). For

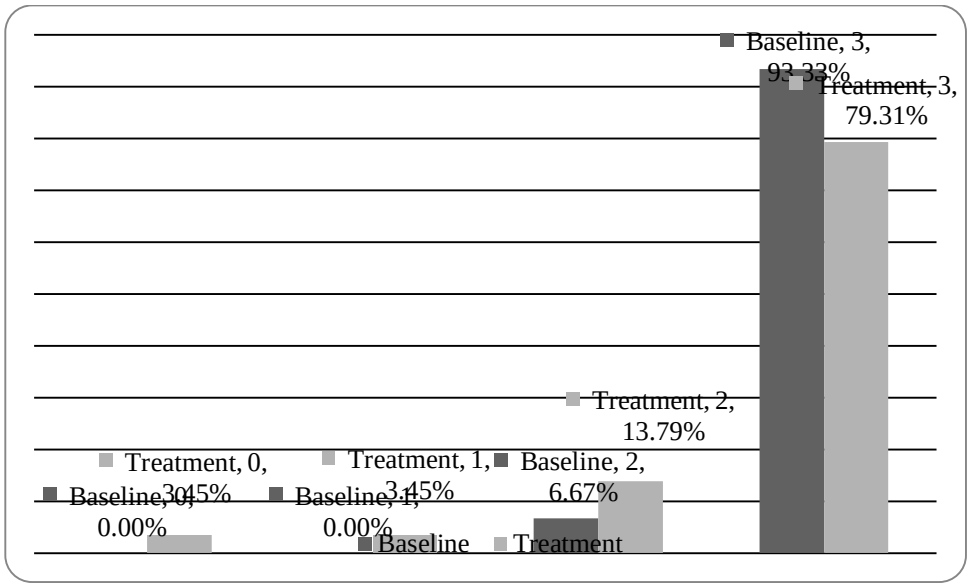

Figure 12. P1's quality of responses to interactions from customers.

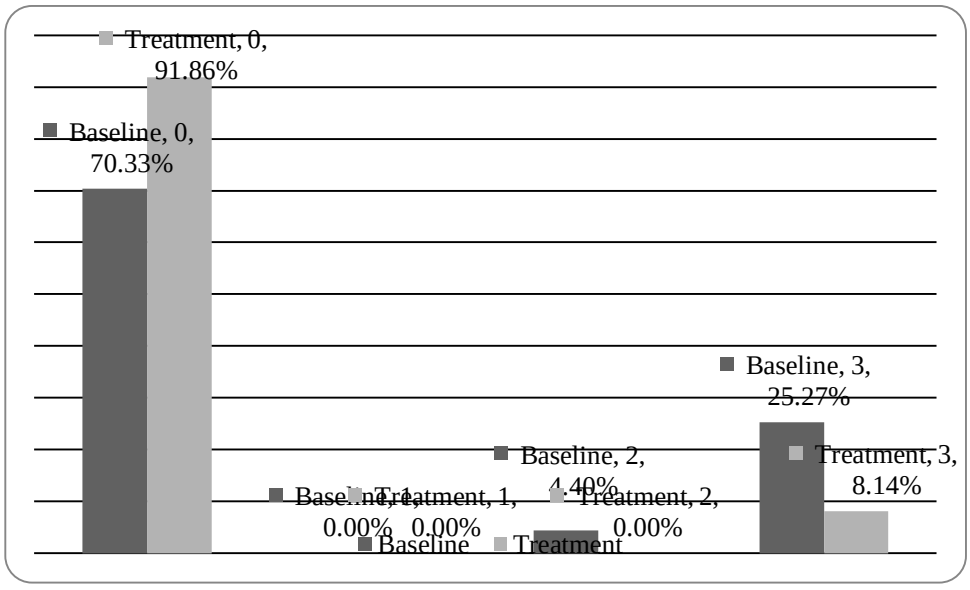

Figure 13. P2's quality of initiations with peers.

initiations with peers, the data showed evidence enough to fail to reject the null hypothesis.

Responses to peer initiations for P2 during baseline data collection were recorded at level zero (0) for 83.12 percent of peer initiations and level three (3) for one-tenth (10.39%) of observed responses. Following treatment, level zero (0) responses to interactions decreased significantly (13.04%) while level three (3) responses increased (78.26%). See Figure 14. In regard to responses to initiations made by peers, there is evidence enough to reject the null hypothesis.

P2 interacted with supervisors at a level zero (0) for over half (57.14%) of observed initiations (see figure 15). Initiations at level three (3) were observed for just under half (42.86%) of the observed initiations. Following treatment, all initiations were recorded at level three (3). P2 did not initiate interactions with support staff or other

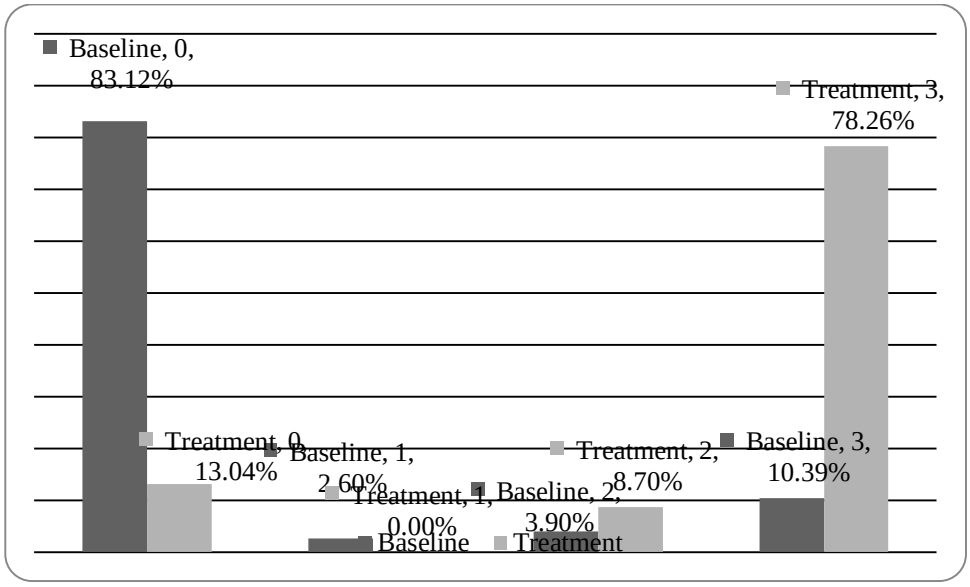

Figure 14. P2's quality of responses to interactions from peers.

individuals in the environment while being observed. These data provide evidence to reject the null hypothesis.

P2 also responded to initiations from supervisors. See figure 16. Baseline data collection showed a seventy percent (70.00%) level zero (0) rating with level three (3) demonstrated at ten percent (10%.00). Following intervention, P2's level zero (0) responses to supervisor initiations decreased to none while level three (3) responses increased to 92.00 percent. He also responded to support staff after intervention twice at level three and to others in the environment seven (7) times also at level three (i.e., 100 percent). No figure is provided for responses to support staff.

Participant 3. Figures 17-22 show P3's observed quality of interactions. Her baseline initiations with peers were observed at level zero (0) for nearly all (95.74%) interactions with peers. She seldom demonstrated initiation at higher levels (figure 17). Following treatment, P3's level zero (0) initiations decreased to two-thirds of observed initiations with peers while levels two and three increased to approximately 16 percent and 17 percent respectively. These data provide evicence to reject the null hypothesis. P3 responded to peers and supervisors and was the only participant to respond to initiations by support staff found naturally within her environment. Figure 18 shows P3's quality of responses to initiations made by peers were recorded at level zero (0) for over half (55.56%)of her observed responses with about one-tenth (11.11%) of responses rated at level three (3). Following treatment, P3's response quality at level zero (0) were recorded at 15.38 percent while level three (3) responses increased to nearly seventy percent (69.23) of observed responses.

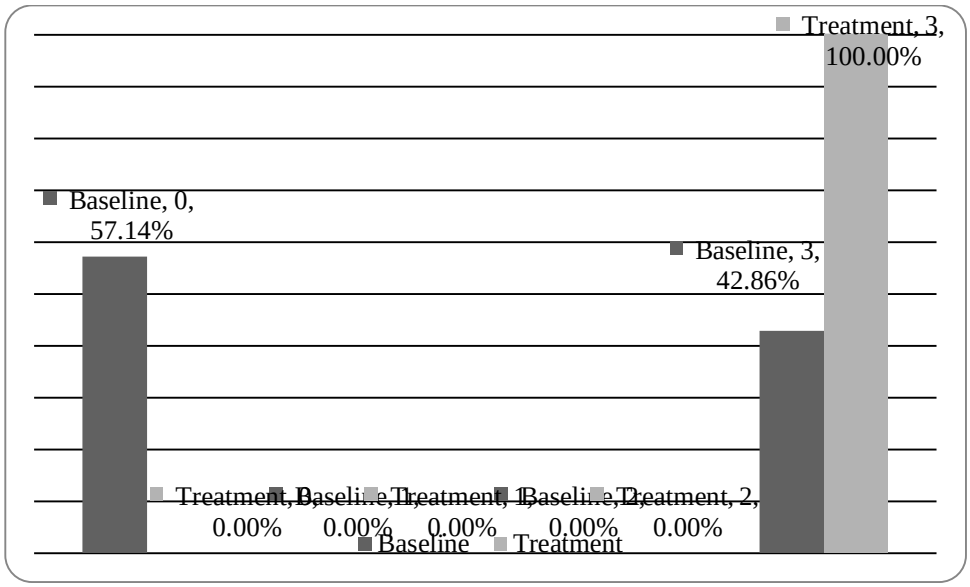

Figure 15. P2's quality of initiations with supervisors

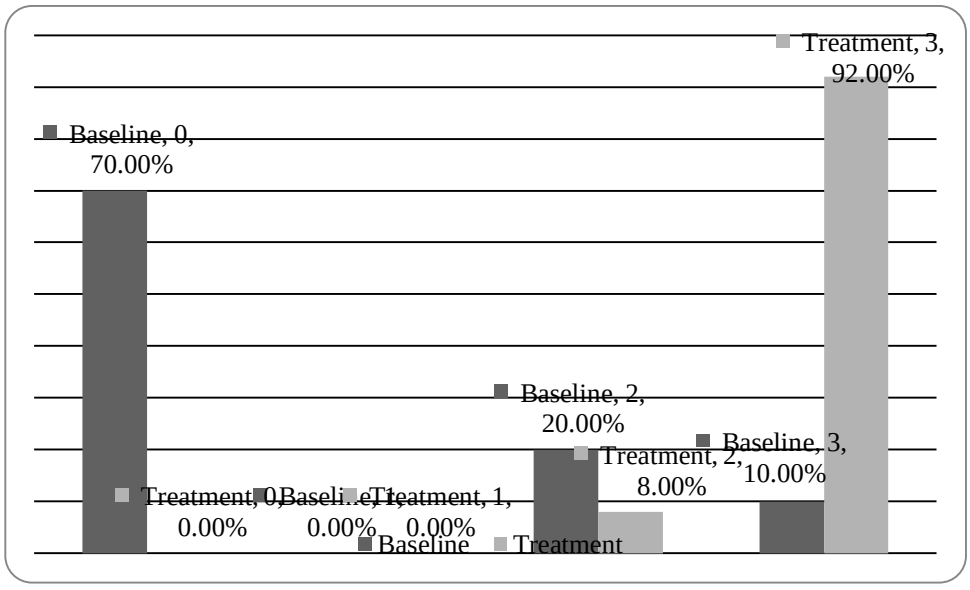

Figure 16. P2's quality of responses to interactions from supervisors.

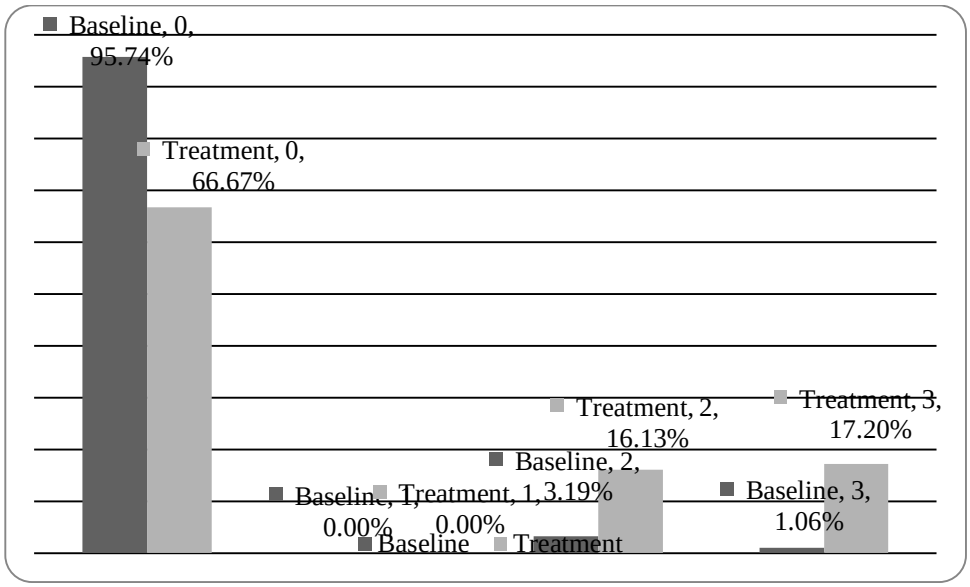

Figure 17. P3's quality of initiations with peers.

P3 initiated interactions with supervisors during baseline data collection only. She demonstrated no initiations with supervisors after intervention. See Figure 19. Figure 20 shows P3's responses to interactions initiated by supervisors. She appropriately responded to supervisors at levels two (2) and three (3) half the time for each quality level during baseline data collection. She did not respond to supervisors following treatment. There is evidence to fail to reject the null hypothesis. Finally, P3 interacted with support staff that were naturally found within the environment during baseline and treatment observations. Her quality of interaction during baseline were at level zero (0) for over half (57.14%) of her initiations with support staff while she demonstrated no (0.00%) initiations that were at level three (3) (see figure 21). Her quality of initiations rated level zero (0) decreased (31.03%) while her level three (3) incresed to nearly half (48.8%).

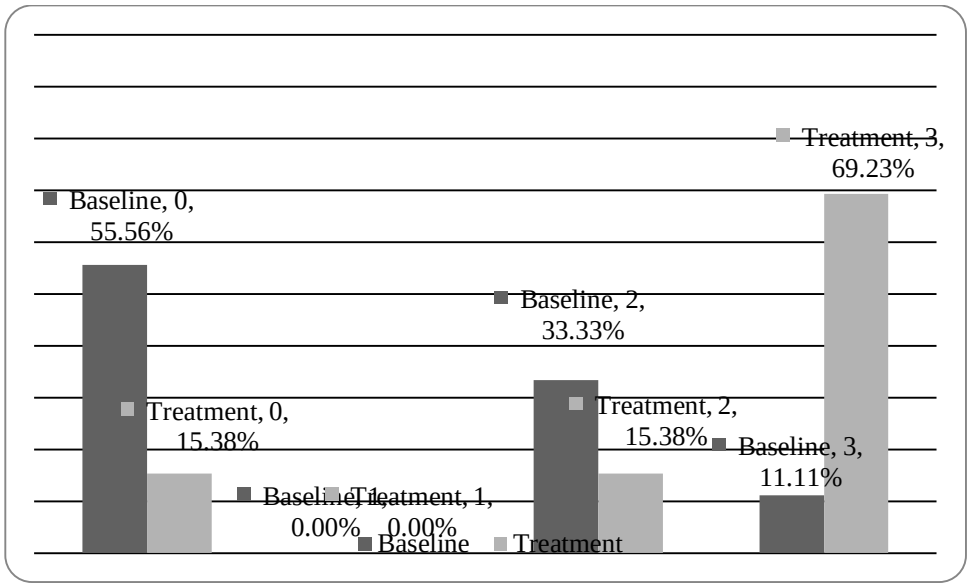

Figure 18. P3's quality of responses to interactions from peers.

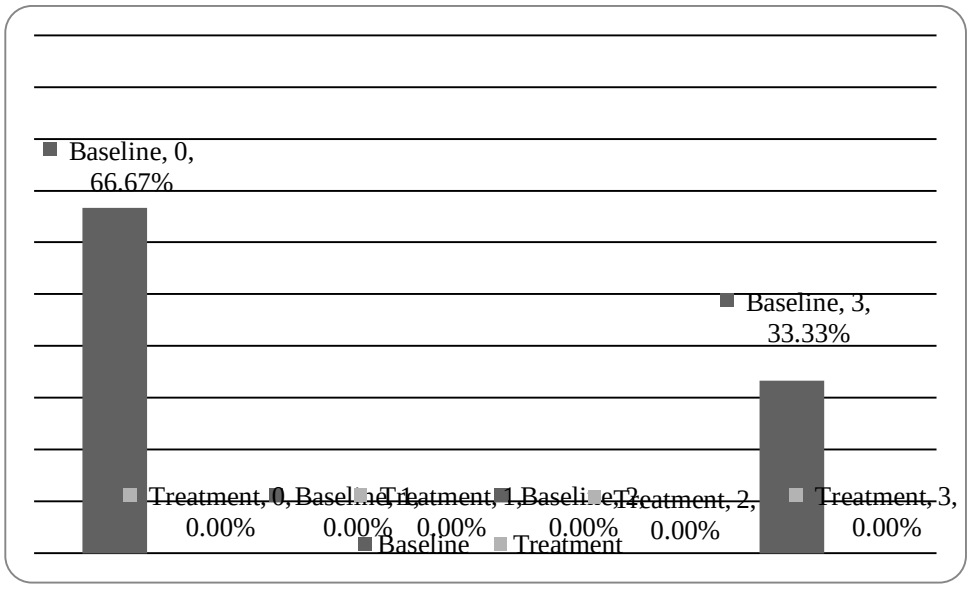

Figure19. P3's quality of initiations with supervisors.

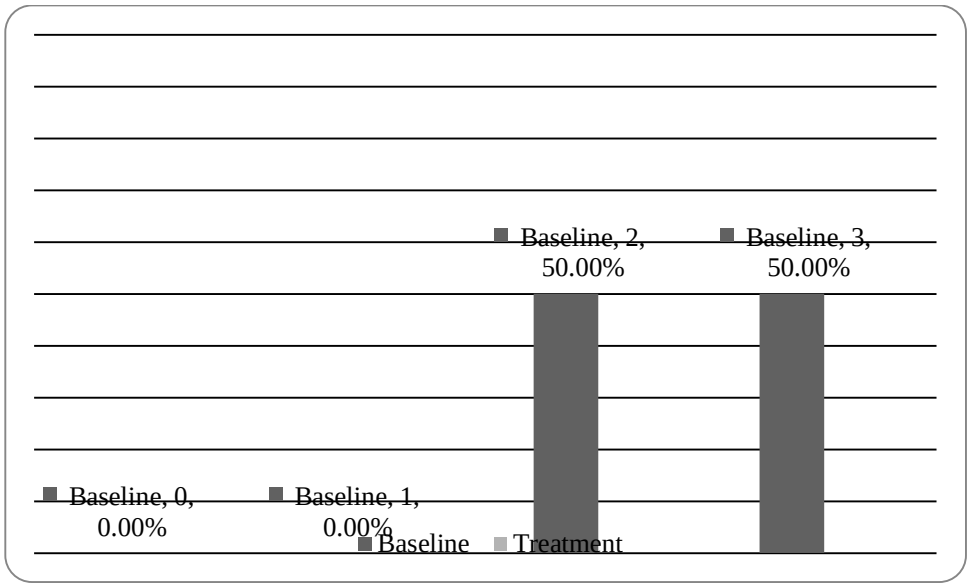

Figure 20. P3's quality of responses to interactions from supervisors.

P3 responded to support staff naturally found in the environment in which she was observed. Figure 22 shows that her observed responses at level zero (0) were demonstrated less than one-forth of her responses while levels two (2) and three (3) were observed at 38.46 percent. Following treatment, her demonstration of level zero (0) increased (28.95%), as did her level three (3) responses (5.26%). However, her level two (2) interactions decreased as well. These data are mixed so they provide evidence enough to fail to reject the null hypothesis.

Synopsis of Test Results

The data displayed above shows mixed results in terms of the research questions. The number of interactions across participants increased from baseline through treatment data collection overall. Statistical analyses of effect size (i.e., PND and PAND) found greater effect with the PAND statistic and with responses to initiations made by others

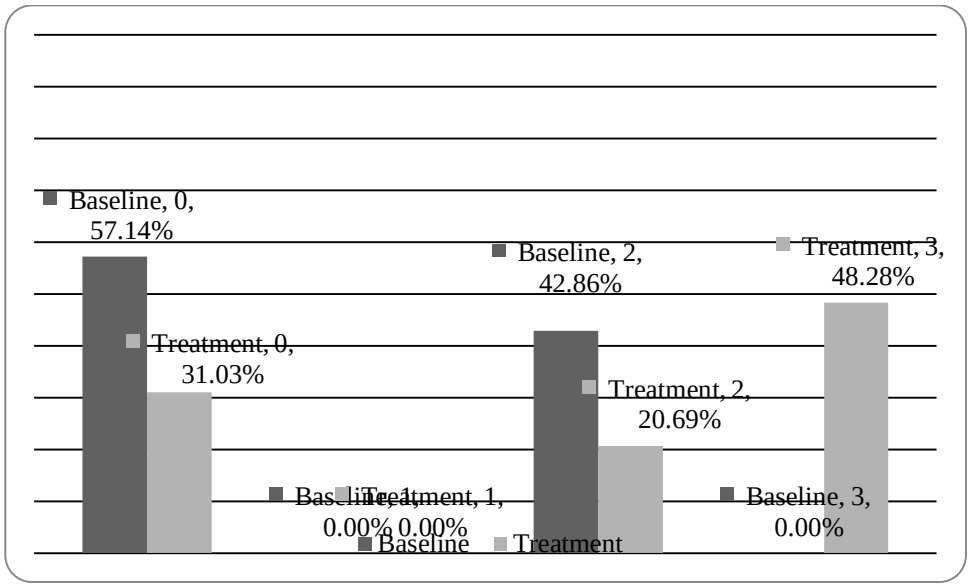

Figure 21. P3's quality of initiations with support staff.

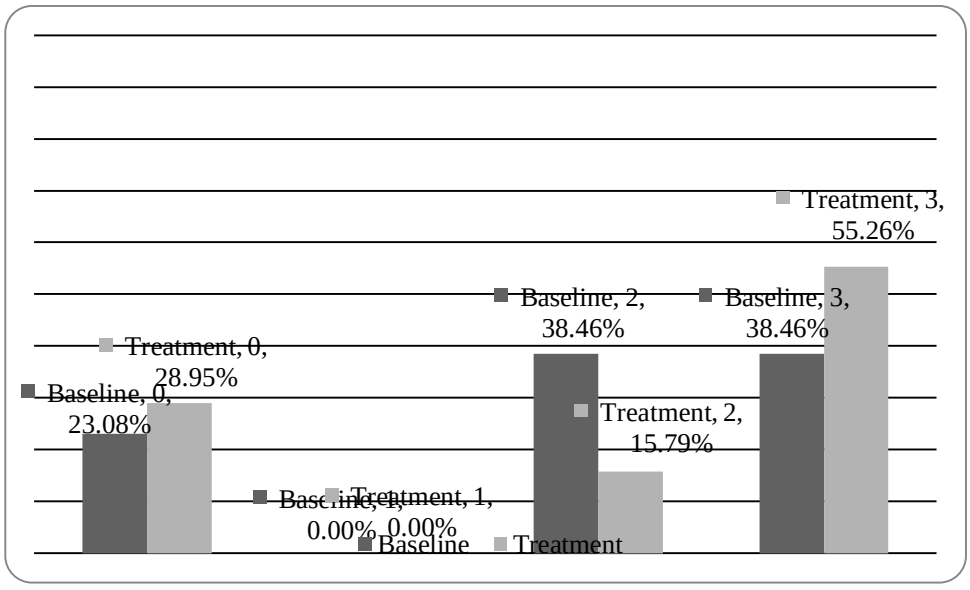

Figure 22. P3's quality of responses to interactions from support staff.

than the PND statistic found (see Tables 2 and 3). Although initiations with others in participant-selected sites saw some effect, it was greatest for the female participants using

the PND and mixed using PAND. Individual results provide more detail than across participant results.

Individually, P1 increased the number of initiations as well as responses to initiations made by others across time. Although her responses during baseline were between 64 and 100 percent, the responses after treatment ranged much higher with a lowof 84.62 percent. Following treatment, she demonstrated 100 percent responses to initiations made by others in four of the six observation sessions. The effect size indicates that the treatment showed success for P1's initiations; however, a minimal effect size was seen for her number of responses made. Removal of an outlier only changed the effect to minimal. It can be stated that the intervention made an impact on P1's number of initiations of interactions in age appropriate adult social roles. Since she already had a fairly high level of responses during baseline data collection, the effect was much smaller when considering her responses to others' initiations of interactions.

In summary, P1's job expectations required her to navigate between interacting with those who could support her to those to whom she was to provide service. The number of interactions, both initiations and responses, increased from baseline through treatment, providing enough evidence to reject the null hypothesis. The treatment increased the number of interactions made by P1. P1 had fewer interactions with customers than with any other group. Therefore, each interaction had a strong influence on the overall number of each quality of interaction. P1 also had one interaction that resulted in her shutting down and becoming quiet for the remainder of her shift. A customer complaint resulted in P1 receiving criticism from her supervisor. The results of

her interactions with customers may not represent P1's learning during the learning sessions. P1's interactions with others provided evidence that the intervention was effective when she interacted with peers and supervisors. Due to her adverse experience with a customer, there is not significant evidence to support the hypothesis that the treatment increased the quality of interactions. Therefore, for P1, we must fail to reject the null hypothesis.

P2 also increased the number of initiation and responses to initiations made by others from baseline through treatement data collection observations. His baseline initiations ranged from 3.33 percent to 25.00 percent while his initiations following treatment ranged from 5.00 percent to 50.00 percent. Additionally, his responses during baseline ranged from 6.06 percent to 58.33 percent while responses ranged from 50.00 percent to 100.00 percent following treatment. Interestingly, following treatment three-fourths of observations found 100.00 percent responses to initiations made by others. The treatment had a positive impact on P2's number of interactions in both initiations and responses to initiations made by others. A minimal effect was found for initiations; however, a moderate effect was found for responses when PND was used. PAND found a larger impact on initiations resulting in a moderate effect as well.

P2's quality of interactions were mixed. His quality of initiations with peers showed an increase of low quality interactions and a decrease in higher level interactions. His initiations with supervisors showed the opposite effect, however. He did not initiate interactions with support staff or others during observation sessions.

Overall, P2 decreased his quality of interactions with peers. This may be due to his low rate of engaging in multiple environments. P2 chose to play a game on his smart phone and text his girlfriend rather than interact with those around him. Although he was probably appropriately responding to texts, he chose not to interact with those in the same room. Due to mixed results, there is evidence enough to fail to reject the null hypothesis.

The final participant, P3, also increased initiations following treatment. Her number of initiations during baseline ranged from 0.00 percent to 23.33 percent while it ranged from 29.03 percent to 53.33 percent following treatment. Her responses to initiations by others ranged from 50.00 percent to 100.00 percent while her responses after treatment rose steadily from 46.15 percent to 100.00 percent. Although this could be viewed as a better response before treatment, the single outlier of 100.00 percent during the first observation skews the overall picture. The remaining three data points ranged from 50.00 percent to 62.50 percent. In summary, P3's number of initiations increased following treatment. Due to an outlier at 100.00 percent, her responses were nearly equal from baseline to treatment. Excluding the outlier, P3's responses also increased following treatment. The intervention had a large effect size on initiations with a moderate effect size on responses.

The quality of her initiations with peers increased while those with supervisors decreased. Her responses also improved when interacting with peers. Since she did not respond to supervisors following treatment, no statement can be made about the impact on interactions with supervisors. Although she increased the percent of level zero (0) responses to support staff and decreased the percent of level two (2) responses, her level

three (3) responses increased. P3 decreased her low level responses and increased her higher level responses with peers and with support staff. However, she made no initiations or responses following treatment. There is not enough evidence from P3 that the hypothesis could be supported so the null hypothesis must be accepted.

Summary, Discussions, and Transition Statement

This study sought to determine the effect of using commonly available hand-held technology in relation to initiation and response to initiations made by others in adult social roles. The emphasis on self-determination led to participants choosing the environments in which they were observed. In addition, participants chose the type of technology they were to use in adult social roles. Although participants chose not to use live video chatting to support them at work or in social settings, the treatement sessions that addressed initiating and responding to interactions made by others had an impact on all three participants. Participants were observed using cell phones of their own for multiple purposes. For example, P1 texted with people who provided support to her in the form of transportation to and from work. She additionally sent text messages to the researcher to communicate about scheduling observation sessions. P2 interacted with someone outside of the environment by texting as well. He also spent a considerable amount of time talking on the phone when he was in a recreational environment. His interaction on the phone led to increased level zero (0) initiations and interactions with peers in the same setting as he chose to use the phone rather than take advantage of opportunities to interact with peers and supervisors. P3 also spent many minutes texting and using her cell phone. It is unclear the purpose of her use of cell phone during most of

the observations because she did not talk on her phone. She may have been playing games or interacting with someone outside of the environment. However, her number of interactions with people in her environment increased from baseline to treatment observations. In summary, the instructional sessions did increase the number of interactions initiated and to which participants responded.

The study also sought to determine the quality of interactions made by those in the study. On a scale of zero to three, participants were rated on the quality of initiations and responses to interactions initiated by others. Both female participants decreased their inappropriate or nonexistent interactions with peers following instruction and increased levels two and three interactions. Due to P2's choice to use his cell phone rather than interact with others in the room, his level zero initiations actually increased following treatment. His level three initiations also decreased because he chose not to interact with people in the room with him when using his phone.

The instructional sessions impacted the quality of interactions with supervisors in a similar manner for P1 and P2. P3's interactions with supervisors actually ceased following intervention. She was able to make choices for her meal items and wait with peers for the cafeteria to open without interacting with supervisors.

Generally, the quality of interactions increased for P1 improved, for P2 improved with supervisors but decreased with peers, and increased for P3 when interacting with peers. Chapter 5 discussed the implications for social change and lines of future research that might be conducted to further answer the research questions posed for this study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Literature exists that supports the use of technology in multiple contexts for individuals with disabilities (Dicianno, Bellin, & Zabel, 2009; Dutta, Schiro-Giest, & Kundu, 2009; Freeland, Emerson, Curtis, & Fogarty, 2010; Hamm& Mirenda, 2006; Kelly & Smith, 2008; McDonnal & Crudden, 2009; McNamee, Walker, Cifu, & Wehman, 2009; Myers, 2007; Specht, Howell, & Young, 2007; Webb, Patterson, Syverud, & Seabrooks-Blackmore, 2008; Wehman, Gentry, West, & Arango-Lasprilla, 2009). However, the use of such technology to support individuals with ID is significantly lower than for individuals without disabilities (Palmer, Wehmeyer, Davies, & Stock, 2012; Stock, Davies, Davies, & Wehmeyer, 2006; Stock, Wehmeyer, Davies, & Palmer, 2008; Wehmeyer et al., 2006). Although schools have increased the use of such devices as iPads, SmartBoards, and laptops with the general population, their use as a support for individuals with disabilities to assist in increasing independence has not been researched.

American schools are tasked with preparing all students to be college and/or career ready regardless of ability level (US Department of Education, n.d.). John Dewey (1915) suggested the vitality of knowing that one's role as part of the whole was essential to all learning. In his time, Dewey cited the family unit as part of the education of children in that the family members each had a definite role. If tasks assigned to the role were completed, the family benefitted. If the family was able to produce more than the family could use, the neighborhood benefitted. If, on the other hand, tasks were not

completed, the family suffered. There was a clear connection between what was being taught and how each part fit with the family unit. Generalization of skills was essential to success.

Education laws have changed the outlook on what students with disabilities should learn as well. The Division of Career Development and Transition (1994) defined transition as a shift from being and acting as a student to acting as an adult within the general community. Since these students will be moving into the community with their peers without disabilities, they will have expectations that resemble those of their peers. However, their learning expectations tend to be different than those of their peers. Students without disabilities must learn skills that will help them in their postsecondary pursuits (i.e., college or career); students with disabilities should be learning the same things. Teaching strategies may need to change to meet their unique needs (Wehman, 2013).

Transition is a complex time for all youth, with and without disabilities (King, Baldwin, Currie, & Evans, 2005; Kohler & Field, 2003; Timmons et al., 2010; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006). Such content areas as "personal hygiene, clothing care, household chores, food preparation, money management, grocery shopping, gaining access to generic social services, organizing transportation, and making medical and dental appointments" (Halpern, Close, & Nelson, 1986, p. 30) were the focus of education for individuals with intellectual disabilities in the 1980s. Free will, civil and human rights, freedom of choice, independence, personal agency, self-direction, and individual responsibility are markers of transition into adulthood that are now also

required of individuals with intellectual disabilities (Blomquist, 2006; Bremer, Kachgal, & Schoeller, 2003; Mithaug, 1996; Wehman, 1992). While all youth must develop skills in these areas, most do it with a smart phone or other commonly available device in their pockets. Youth with intellectual disabilities, however, use common devices at a much lower rate (Palmer, Wehmeyer, Davies, & Stock, 2012; Stock, Davies, Davies, & Wehmeyer, 2006; Stock, Wehmeyer, Davies, & Palmer, 2008; Wehmeyer et al., 2006).

Technology options are increasing. Simply watching the news provides a potentially overwhelming supply of new devices from which to choose (e.g., Bridget Carey's CNET update). The cost of obtaining such devices is decreasing as the popularity of using hand-held devices increases. Additionally, schools are working to keep up with the technology demands required in business and service provision. The use of devices as education tools as well as the subject matter in classes can be seen by walking into any school Grades K-12.

Unfortunately, the use of paraeducators to provide support tends to be one of the first accommodations sought by schools (Giangrecco, Smith, & Pinkney, 2006). It may be possible to use paraeducators to support the use of technology that is familiar to teachers and peers in classrooms as well as by job coaches in work settings if such use is directly taught to all involved, including the student, paraeducator, and teacher. This has not yet been studied. Studies have been conducted that demonstrate the value of using technological devices to increase independence in individuals with intellectual disabilities (Palmer, Wehmeyer, Davies, & Stock, 2012; Stock, Davies, Davies, & Wehmeyer, 2006; Stock, Wehmeyer, Davies, & Palmer, 2008; Wehmeyer et al., 2006). The interactions

between and among environments can support the use of technologies and their use in educational settings (Bronfenbrenner, 2001a; 2001b; Lerner, 2005).

Although not all homes have computers or internet access, many have smart phones that can support them in a variety of ways. The participants in this study each chose to use his or her smart phone for texting peers, support staff, and family. They stated that they used their devices to help with spelling, reading, calculating, and even navigating the community. Video clips were used in the learning sessions to demonstrate socially appropriate behaviors in social and employment settings. These clips are available for individuals to access in the event that they are unsure of what to do in a specific environment. This may also be known as video modeling which has been shown to be effective in supporting independence in youth with autism and intellectual disabilities (Bellini & Akullian, 2007). Bandura's (1977) research also supported the use of modeling as an effective method for teaching individuals with intellectual disabilities.

Research Question

The research question in the study asked how video chatting on common hand-held devices supported the social/interpersonal skills of transition-age youth with intellectual disabilities at work and social settings. The hypotheses for the study were as follows:

$H1_0$: Use of video chatting on a common hand-held device will have no impact on frequency of initiation of interactions in adult social roles of youth with ID as measured by direct observation of transition-age youth with developmental disabilities in these settings.

$H1_1$: Use of video chatting on a common hand-held device will increase the frequency of initiation of interactions in adult social roles of youth with ID as measured by the direct observation of transition-age youth with ID in these settings.

$H2_0$: Use of video chatting on a common hand-held device will have no impact on proficiency of acceptable social interactions as measured by direct observations in natural environments.

$H2_1$: Use of video chatting on a common hand-held device will increase the proficiency of acceptable social interactions as measured by direct observations in natural environments.

This quantitative study was developed to determine the effectiveness of using video chatting between individuals with ID and support persons without disabilies on common hand-held technologies to support independence for youth with ID in the transition from high school into adult roles. However, participants chose to use their own devices rather than devices unfamiliar to them. In addition, they chose to use natural supports found in their chosen environments rather than a paid support person and video chatting.

Interpretation of Findings

Hypothesis 1. This study's purpose was to discover the impact of using hand-held technologies as support for the initiation of interactions in acceptable adult social roles. All participants had higher rates of responses to initiations made by others than initiations they themselves had upon which they had opportunities to act. Data collection from baseline through treatment showed an increase in the number of initiations made by

all participants. Increases were also found in responses to initiations made by others. While participants chose not to use such applications as video chatting, they consistently used their personal cell phones and smart phones to text for support that included arranging for a ride home for example. Initiations and responses to initiations did increase with the implementation of four learning sessions that used hand-held technology and directly taught how, why, and when to initiate or respond to initiations by others in social, employment, and daily living activities.

The increase in initiations and responses to initiations from others may indicate a step forward for each of the participants. During baseline data collection, participants did not appear to recognize that an initiation or a response was needed. With the increase in observed initiations and responses, it may be suggested that the intervention helped participants to recognize opportunities for interactions.

Hypothesis 2. Additionally, this study's purpose was to determine the impact of using the learning sessions to teach age appropriate social interactions in adult social roles on the quality of interactions. Mixed results were found. Quality of interaction is very subjective. The environment was studied in order to determine the quality of interactions. Each environment has its own set of acceptable behaviors. For example, behaviors at home are different than behaviors in a supervised setting. Bronfenbrenner's (1992) ecological systems theory is supported by the findings that quality of interactions in multiple environments may be different. Expectations must be interpreted by the individual as he or she enters a setting. It is up to the individual to either figure out what is acceptable and expected or to ask someone what is appropriate. Individuals with

intellectual disabilities struggle with recognizing that there are differences from one setting to the next (Halpern, 1985; 1987), let alone identifying what would be appropriate and then isolate the steps to carry them out. What may appear as hesitance or unwillingness to participate appropriately may actually be the result of not even recognizing that there is a change needed from one context to the next.

It may be possible that a device be used to provide video clips or video modeling of appropriate and expected behaviors prior to entering an adult social setting. Additionally, using video chatting may provide live support that reduces the dependency on a stigmatizing "shadow figure" or paid support staff person (Giangreco, Smith, & Pinckney, 2006) to demonstrate appropriate social interactions. Using commonly available hand-held devices may create a common ground upon which relationships with peers, coworkers, supervisors, family, and friends may be built.

This study assumed that the participants had no prior experience with iPad minis and video chatting. While this was true of all participants, they each had experience with hand-held devices and used them to access social support as needed. In addition, the single-case design of the study isolates the results; in other words, one must use caution when attempting to generalize the results of this study into other groups of individuals. While the location of the participants was in a rural state at the time of the study, two of the individuals were not originally from that state. Educational experiences were not discussed with the exception of use of iPads and video chatting. The design of the study, though, reduced the impact of those experiences by collecting baseline data as the participants typically functioned in the environment which included their existing use of

hand-held technological devices. The intervention was then implemented and the effect of the intervention was clear based on the social interactions following intervention.

Recommendations for Action

American schools are tasked with exiting students who are college and career ready. Transition from high school into adult social roles is complex and is confronted by all youth, with and without disabilities. Throughout the K-12 experiences of youth with disabilities, paid adult support providers shadow the students with disabilities as they provide support without providing the skills necessary for independence in adulthood (Giangrecco, Smith, & Pinckney, 2006). These "shadow people" are invaluable to the educational experiences of youth with disabilities; however, their role may need to change to meet the adult world's tech-savvy expectation of high school exiters. Rather than reading to the high school student, special education staff may need to teach how to use applications on devices that read the paragraph to the student for example. This is a shift in thinking about the role of paraeducators. It also puts a larger amount of responsibility on the youth with a disability, requiring them to be responsible for accessing their own accommodations. Ideally, the youth will then be competent at using such accommodations in adult social roles without direct intervention of, and the stigma that accompanies, the presence of "shadow people."

Youth without disabilities use technology at a much greater rate than their peers with disabilities (Davies, Stock & Wehmeyer, 2003; 2004; Gentry, Kvarfordt, & Lynch, 2010; Parker & Banerjee, 2007; Specht, Howell, & Young, 2007; Stock, Davies, Wehmeyer, & Palmer, 2008; Wehman, 2013; Wehman, Gentry, West, & Arango-

Lasprilla, 2009). While technology use increases in schools, the benefits of using hand-held devices with individuals with intellectual disabilities are yet to be discovered. Applications such as Dragon Dictation (Dragon Dictation, 2010-2014) are familiar sights in special education environments. They may also be great tools to use with other students who need a little bit of help, such as lower level readers or English Language Learners. The hand-held devices that exist today support the use of universal design for learning (UDL; CAST, Inc., 2013; UDL Center, 2012) and can enhance the learning of many more students than just those served on an Individualized Education Plan (IEP) for intellectual disability.

Even as the availability of devices is on the rise, the ease of use is also becoming greater. It is not uncommon to see individuals of all ages attempting to learn to use new devices. Individuals with intellectual disabilities are also trying to learn to use them. Smart phones, iPads, iPods, Blackberry phones, and other forms of hand-held devices frequent our schools as well as our communities. Because such devices tend to be similar, their generalization is simpler. Youth pick up on how to use all of these devices by watching others and trying it out at home, in school, and in the community. Modeling takes place in public and private spaces. Research tells us that modeling is an effective way to learn new things and improve things already understood (Bandura, 1977; Bandura & Walters, 1963; Bernstein & Tiegerman, 1993; Bronfenbrenner, 1979; Eurich, 1996; Goldstein, Sprafkin, Gershaw, & Klein, 1980; Knoff, 2003). Video modeling (Bellini & Akullian, 2007) adds the technology piece to modeling and has found it to be effective. It

is time to generalize a bit more and include all individuals in the video modeling realm, including people with intellectual disabilities.

Social supports exist to help with the transition of youth with disabilities into adult life. Funding is used to hire individuals to provide support to individuals with disabilities at work, in the community, and at home via Vocational Rehabilitation and Developmental Disabilities case management and services through state Human Service Centers. Creativity may be needed to realize the potential of using funding to purchase and use such features as video modeling, video chatting, and even texting as methods of providing support. These methods allow for the perception of autonomy and independence of individuals with disabilities while supporting their needs across environments.

It must be noted, however, that commonly available hand-held devices will not be appropriate for every individual with a disability. In fact, they are not all appropriate for every individual without a disability. Matching the individual to the supports needed continues to require each person to be viewed as an individual and their supports tailored to each person.

Social Change Implications

This study provided evidence that youth with intellectual disabilities use hand-held technologies for multiple purposes. Although supports are available on these devices to assist youth in being independent, such as video chatting, these technologies also provide common ground on which to build discussion with peers and supervisors. Hand-held devices have the ability to provide games to be used in unstructured time and

can connect individuals with disabilities with peers without disabilities. For the purposes of this study, these technologies were to be used to connect participants with support providers from a short distance. However, this was not the preferred manner of accessing support. Rather, participants preferred to use texting with support people, use calculator features, and use voice-to-text to assist with spelling. Their devices were also used as the catalyst for conversation with others in the environment including peers, supervisors, and support staff.

Paid support providers are invaluable to the quality of life of people with disabilities. They are tasked with teaching, providing care, supporting independence, and carrying out the plan established by the person with the disability and those who surround him or her. While in school, these individuals with disabilities rely on paraeducators (Giangrecco, Smith, & Pinckney, 2006) and teachers to help them achieve their academic goals while helping them to learn to fit in with their peers. It makes sense that technology is introduced into classrooms to assist students in achieving their post secondary goals. Shifting from giving information to teaching how to access information may be the next role of paid support providers. Such a role will also support the development of self-determination skills (Wehmeyer, 2007) and help all individuals to achieve their lifelong goals.

The availability of technology continues to increase while the costs have begun to decrease. Greater numbers of people carry hand-held devices. These individuals understand how to use similar devices and can provide technical support that was once provided only by trained technicians. Using common devices reduces the need to access

specialists with unique skill sets to troubleshoot situations such as emergencies. Support can then be naturally provided by nearly anyone.

Recommendations for Future Research

Future research may stem in several directions. Isolating a specific hand-held device and application such as video chatting is recommended in order to determine the effectiveness of live support provided from a short distance. Exploring cost effective applications that are useable by individuals with intellectual disabilities is also recommended. Although some companies (i.e., AbleLink) have headed in this direction, those available and perceived as "cool" to use by youth with intellectual disabilities in a rural state may vary. Systemic review may also provide insight into the way in which funds are allocated for staffing and technology. An updated study of the stigma of "shadow people" in the community and within schools would be valuable to assess support needs from a different perspective. Finally, it is recommended that an analysis be done on the current technology use by youth with intellectual disabilities. Many devices may currently be use but their reason for use is unclear. With exposure to technology while in school and in the home, many youth have background knowledge and financial support to use Smart Phones, iPads, tablets, laptops, and other devices not known by the public and considered commonly available.

Conclusion

Transition from high school into adult life is a complex time for all high school exiters (King, Baldwin, Currie, & Evans, 2005; Kohler & Field, 2003; Timmons et al., 2010; Van Naarden Braun, Yeargin-Allsopp, & Lollar, 2006). Youth with intellectual

disabilities are no exception. The rapid rate at which hand-held technology is increasingly used, however, is not the same as its use with people with intellectual disabilities (Davies, Stock & Wehmeyer, 2003; 2004; Gentry, Kvarfordt, & Lynch, 2010; Palmer et al., 2012; Parker & Banerjee, 2007; Specht, Howell, & Young, 2007; Stock, Davies, Wehmeyer, & Palmer, 2008). Although studies have found effectiveness in using hand-held devices with individuals with intellectual disabilities, the devices were expensive and not well known by the general public (Davies, 2011; Davies, Stock, & Wehmeyer, 2003; 2004; Stock, Davies, Wehmeyer, & Palmer, 2008; Wehman, Gentry, West, & Arango-Lasprilla, 2009).

This study found direct instruction of initiations and responses to initiations made by others to be effective. This is not surprising as research has found direct instruction to be effective for decades (Halpern, 1985; 1987; Turnbull & Turnbull, 1992). Initiations of interactions in adult social roles increased for all participants. Responses to initiations made by others also increased for all participants. However, responses to others was found to be greater for both baseline and treatment data recording sessions. This implies that individuals with intellectual disabilities failed to recognize when an initiation was appropriate while initiation made by others was enough of a cue to elicit an appropriate response.

Although devices were available on which participants could use video chatting or other applications, participants in this study chose to use their own devices. This may be due to their familiarity with the device. One participant found the device to be useful in unstructured time and could use the applications on the phone to connect with others in

the environment. None of the participants wanted to use video chatting with a paid support person; rather they chose to use applications with which they were familiar.

Participants in this study demonstrated that the context in which actions take place are specific to those individual environments. Quality of interactions is also defined by each context. Although there are curricula available to teach appropriate social skills, they are not specific to each individual context in which the individual will be required to interact. Individuals with intellectual disabilities must be part of the decision regarding where and when to interact including living, learning, and working in community based settings. With that involvement, the individual can increase his or her self-determination skills and be active in planning short and long term goals as well as the steps to reach those goals.

In conclusion, this study adds to the research base on using technology to support individuals with intellectual disabilities in adult social roles. The use of video chatting was not the preferred application of participants. Direct instruction on the use of video chatting and other applications should be explored further. Verizon (2013) depicted the use of cell phones with video chatting as a support from the older sister to the younger brother on his first day of high school. It is yet to be determined if such support of youth with intellectual disabilities might be effective and acceptable in modern adult social roles. The costs of commonly available hand-held devices may make such support affordable while making the device familiar and acceptable in the general community. Natural supports, then, exist within any environment in which hand-held devices are

found. As evident in the Verizon commercial, these devices are found in the pockets of transition-age youth and adults in school, work, and social environments.

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Wehmeyer, M., & Palmer, S. (2003). Adult outcomes for students with cognitive disabilities three years after high school: The imipact of self-determination. *Education and Training in Developmental Disabilities, 38* (2), 131-144.

Wehmeyer, M., Palmer, S., Smith, S., Parent, W., Davies, D., & Stock, S. (2006). Technology use by people with intellectual and developmental disabilities to support employment activities: A single-subject design meta-analysis. *Journal of Vocational Rehabilitation, 24,* 81-86.

Curriculum Vitae

Janet E. Green

EDUCATION:
Pursuing PhD, Special Education, Transition to Adult Roles
Walden University
October 2007-August 2013

M.S., Education, Specialization in Specific Learning Disabilities, 2000
Minot Statae University, Minot, ND

B.S. in Education, Education of Mental Retardation and Elementary Education, 1999
Minot State University, Minot, ND

MASTERS THESIS: What's My Role? Perspectives of Paraeducator Roles
Examined the roles of paraeducators in rural ND schools from the perspectives of administrators, teachers, and paraeducators.

CERTIFICATIONS: Specific Learning Disabilities teacher, ND
Emotionally Disturbed teacher, ND

COMPETENCIES: Trained by Institute of Education Science in the use of *National Longitudinal Transition Survey-2*(NLTS-2) data (January 2009)
Special Education Assessment
Staff training on disability and special education law
Mentoring new special education staff
Excel use and training

CITIZENSHIP STATUS: US Citizen

TEACHING EXPERIENCE:

Special Education Transition teacher
Magic City Campus-Crossroads
Minot Public Schools
August 2012-present

Adjunct Instructor, Department of Special Education
MinotState University
August 2005-present

Special Education teacher
Dakota Memorial High School

Dakota Boys & Girls Ranch
August 2002-August 2005

LD/ED/MR(ID)teacher
TGU Consolidated School District
Towner, Graville, and Upham, ND
August 2001-August 2002

LD teacher
Devils Lake High School
Devils Lake Public Schools
August 2000-June 2001

WORK EXPERIENCE:

Project Director, Adult Student Transition Education Program
North Dakota Center for Persons with Disabilities (NDCPD)
Minot State University
October 2010-August 2012

Core Research Coordinator
North Dakota Center for Persons with Disabilities
Minot State University
January 2010-August 2012

Project Coordinator, Think College: Strategic Planning for Inclusing PSE in ND
North Dakota Center for Persons with Disabilities
Minot State University
January 2010-October 2010

Project Coordinator, North Dakota Integrated Services Project
North Dakota Center for Persons with Disabilities
Minot State University
July 2009-October 2010

Project Director, We're Ready
North Dakota Center for Persons with Disabilities
Minot State Univeristy
October 2008-September 2010

Trainer: Dakota Boys and Girls Ranch Training Contract
North Dakota Center for Persons with Disabilities
Minot State University
December 2007-January 2009

Project Director, Transition Partnership Project IV-VII
North Dakota Center Persons with Disabilities
Minot State University
January 2006-June 2011

Project Coordinator, Online IEP Feasibility Study
North Dakota Center for Persons with Disabilities
Minot State University
August 2005-January 2006

PRESENTATIONS:

Poster presented at Council for Exceptional Children Annual Conference — April 2012
Connected: Social Integration using Cell Phone Technology

North Dakota Center for Persons with Disabilities — Sep, 2010
Behavior Supports in Preschools and Head Starts in ND

Pride, Incorporated Annual Conference — Jan. 29, 2009
Excel: Beyond the Basics

Tri-City CARES, Inc. — Dec. 10, 2008
Working with Challenging Behaviors

Communication Disroders 538 Minot State University — Sep, 2008
Assessment and Disabilities: Guest Lecturer

Technical Assistance Presentation — Sep, 2007
Clearfied Job Corps Center, Clearfield, UT
Making the Pieces Fit

GED Curriculum Training Conference, Denver, CO — May 1, 2007
Learning Disabilities: The Mystery Unfolded

Del-Jen Joint Academic & Career Technical Training Conference — April 2007
Academic Success: Supporting Learners with Disabilities

Technical Assistance Presentation and Discussion (staff) — Apr 19, 2007
North Texas Job Corps Center, McKinney, TX
Mysteries of Disabilities

Technical Assistance Presentation to staff and students — April 2007

Kicking Horse Job Corps Center, MT
Mysteries of Disabilities

Flatlands Training Presentation — Aug/Sep 2006
Minot, ND
Excel Survival Skills

ND Association of Community Facilities Conference — May 4, 2006
Bismarck, ND
Excel Survival Skills

Crossroads to the Future Conference — Oct 25, 2005
Bismarck, ND
Excel Survival Skills

Paraeducator Training sponsored by ND CASE — June 2005
Jamestown College, Jamestown, ND
Verbal De-escalation Techniques

ND Council for Exceptional Children Annual Conference — Feb. 3, 2005
Fargo, ND
Classroom Management: Common Sense Consistency

Devils Lake Public Schools Staff In-service — April 2001
Devils Lake High School
Challenging "Challenged" Students Fairly mini session

PROFESSIONAL MEMBERSHIPS: Council for Exceptional Children (CEC)
President, Magic City CEC (2008-2009)

RESEARCH:

Connected: Social Integration using Cell Phone Technology: Study of an adult with ID and his use of a cell phone to socially connect with friends, support people, and co-workers.

Behavior Supports in Preschool and Head Start in North Dakota: Survey of preschool and Head Start teachers on self-reported use of components of Positive Behavior Support.
Spring/Summer 2010

Online IEP Feasibility Study: Studied the feasibility of an online case management system fo ruse in the public schools in North Dakota via paper questionnaire. Fall 2005

Job Corps Disability Needs Assessment for Region IV Job Corps centers. Studied the disability training needs of Job Corps centers in the Dallas region via paper questionnaire. Summer 2006

Transition Partnership Project. Telephone interview of youth who exited high school and special education programs during the previous academic year. This project was an ongoing project that reported to the ND Department of Public Instruction on the transition issues of youth with disabilities. The project was in operation from 1999 through 2011.

PUBLICATIONS:

Green, J. (2010). *Behavior Supports in Preschool and Head Start in North Dakota.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2010). *NDIS Healthy Transitions Resources and Materials List.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2007). *Clearfield Job Corps Center Technical Assistance Report.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. & Berg, R. (2007). *NDCPD Job Corps Disability Resource Center Technical Assistance Summary: Kicking Horse Job Corps Center.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. & Salazar, C. (2008). *ND transition follow-up annual report.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. & Salazar, C. (2007). *ND Transition follow-up annual report.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J., Salazar, C., Berg, R., & Askvig, B. (2006). *NDCPD Job Corps disability resource center region IV disability needs assessment full report.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J., & Berg, R. (2007). *Resource mapping process-programs related successful placement of individuals with disabilities in the trade or related field in which*

they have been trained. Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Billings, C. & Green, J. (2006). *Promoting self-determination: Helping students make their own choices.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J., Billings, C., & Berg, R. (2006). *Preliminary executive summary: NDCPD Job Corps disability needs assessment.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2006). *Collaborating with rural parents: A learning module for the Rural Special Education Strategist project.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2006). Effectively supporting students in rural general education classrooms: A learning moduel for the Rural Special Education Strategist project. Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2006). *Effective behavioral interventions: A learning module for the Rural Special Education Strategist project.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2006). *Effective teaming inrural communities: A learning module for the Rural Special Education Strategist project.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2006). *Functional behavioral assessment: A learning module for the Rural Special Education Strategist project.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2006). *Monitoring student progress and IEP compliance: A learning module for the Rural Special Education Strategist project.* Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

Green, J. (2006). *Relating to diverse personalities and cultures: A learning module for the Rural Special Education Strategist project.* Minot, ND: North Dakota Center

for Persons with Disabilities, a University Center of Excellence at Minot State University.

Garnes, L. & Green, J. (2005). *Online IEP Feasibility report.* Report prepared for the ND DPI Office of Special Education. Minot, ND: North Dakota Center for Persons with Disabilities, a University Center of Excellence at Minot State University.

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Appendix A. Recruitment flyer.

Seeking research study participants…

I am studying how young adults with disabilities talk to people they work with and hang out with. I am looking for three (3) young adults who participate in "Teens Night Out" for my study. The study involves me watching you in work, school, or community activities over a 9 week time frame. I will write about how you act, especially how you start conversations with friends or co-workers or how you reply when a friend or co-worker talks to you. I will watch you four to seven times (4-7) for 30 minutes. Then, after two weeks, I will watch you again for four to seven times (4-7) for 30 minutes.

Even though there are no direct benefits from being in the study, your participation is very helpful.

If you are interested, please contact Janet Green (janet.green@waldenu.edu).

This study is being conducted in fulfillment of requirements for receipt of PhD in Special Education through Walden University. IRB approval number 06-03-14-0071216.

Appendix B. Data Collection Form

Data collection form								
Environment			**Date**		**Time**			
					AM	PM		
People	Peers (P)	Supervisors (S)		Customer	Support Staff (SS)	Other (O) (Specify):		
Initials/ID								
	Initiations				**Responses**			
Minutes	Actual	Opportunities	Who	Quality	Actual	Opportunities	Who	Quality
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
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27								
28								
29								
30								

Appendix C. Defining the Target Behavior

Definitions: The following definitions will assist you in identifying and recognizing the target behaviors to be recorded on the data collection form. Following the definitions are brief examples and nonexamples of each.

Initiation of interaction: In order to interact appropriately with peers, supervisors, and customers in natural environments, an individual must initiate interactions through verbal and physical exchanges. Initiation of interactions involves recognizing that others are present, approaching the individual, getting his or her attention, and making a statement or gesture. In the examples noted below, the words in parentheses signifies a data recording stimulus and its correct recording space on the data collection form.

Response to interaction initiated by another. Appropriate social interactions also require an individual to respond to exchanges initiated by others within social contexts. The participant must recognize that an individual is present, maintain appropriate boundaries and body language, make eye contact, and respond to the statement or gesture made by the other person. Eye contact may be brief. Body language and boundaries depend upon the context. A response to the statement or gesture may involve an action or a statement.

Example 1: Joe enters a work setting (initiation opportunity) and briefly says hello to a supervisor (initiation actual). He then moves into his specified work tasks. Joe works with Alan today. Alan says, "Good morning, Joe." (response opportunity) Joe looks at Alan, smiles, and nods (response actual).

Example 2: Joe has been at work for 15 minutes. He completed his first task of wiping tables. Joe needs to ask his supervisor if he has completed the task appropriately before he moves to his next task (initiation opportunity). Steve, his supervisor, is standing nearby. Joe approaches Steve, thus getting his attention and says, "I'm done with the tables." (initiation actual).

Example 3: Joe has been working on rolling silverware for 10 minutes. He has run out of napkins though there are plenty of silverware items left to roll. Joe is unsure what to do (initiation opportunity). Rather than recognizing his need for information, Joe stands and waits for direction (initiation actual). Steve notices that Joe is not working. He asks Joe, "Joe, how are you doing?" (response opportunity). Joe says "I'm done." (response actual). This response tells Steve that Joe needs assistance so he gives direction on what is expected next.

Proficiency standards: Standards for identifying if the student met the minimum requirements for demonstrating socially acceptable exchanges related to initiation of and responses to interactions with peers are defined by the context. That is, acceptability is dependent on context. Based on the examples above, the following will be recorded on the data collection form.

Example 1: Initiation	+	Response	+
Example 2: Initiation	+		
Example 3: Initiation	-	Response	+

Although this might be perceived as (-), it is recorded as (+) since it was a socially appropriate response that cued Steve that Joe needed more direction. Had Joe not responded or yelled and screamed, the response would have been recorded as (-). This is a good example of the need for context to set the standards for proficiency. The personnel at the work site would provide input as to the appropriateness of such a response prior to data collection.

Scoring Rubric

Quality of **initiation** / **response** to initiation of interaction.

The following will be used to identify the quality of the initiation or response to the initiation of an interaction in adult social roles.

Score	Criteria
3 (with no prompts)	Initiates or joins conversation **with no prompts**. Initiates/responds to unprompted interaction using appropriate voice tone, volume, and body language. Topic relates to context. Respects personal space. Accepts/responds to help appropriately. Accepts/gives praise and/or feedback. Recognizes need/opportunity to initiate/respond.
2 (with minimal visual/verbal cues. Requests help via video chat)	Initiates or joins conversation **with minimal visual/verbal cues. Requests help via video chat or modeling**. Initiates/responds to interaction using appropriate voice tone, volume, and body language. Topic relates to context. Respects personal space. Accepts/responds to help appropriately. Accepts/gives praise and/or feedback. Recognizes need/opportunity to initiate/respond.
1 (with significant visual/verbal cues. Relies on staff support to initiate video chat)	Initiates or joins conversation **with significant visual/verbal cues. Relies on staff support via video chat**. Recognizes need/opportunity to initiate/respond but does not act independently. Initiates/responds to unprompted interaction using appropriate voice tone, volume, and body language. Topic relates to context. Respects personal space. Accepts/responds to help appropriately. Accepts/gives praise and/or feedback. Recognizes need/opportunity to initiate/respond.
0 (Does not initiate or respond even with video chat support. Proximity needed for cues and modeling.)	Does not initiate or join conversation. Proximity needed for cues and modeling. Does not recognize need/opportunity to initiate/respond. Inappropriate voice tone, volume, and/or body language. Topic does not relate to context. Does not respect personal space. Does not accept/respond to help appropriately. Does not accept/give praise and/or feedback.

Appendix D: Consent for Participation

I am studying how young adults with disabilities talk to people they work with and hang out with. All young adults with disabilities who attend Social Skills instruction with Dr. Solberg at Eaton & Associates in Minot are eligible to participate. This form is part of a process called "informed consent" so you understand the project before you decide to participate. I am looking for three (3) young adults who participate in Social Skills instruction with Dr. Solberg at Eaton & Associates in Minot for my study. The study involves me watching you in work, school, or community activities over a 9 week time frame. I will talk to your supervisor or coordinator to explain the research study in which you are participating and get permission to observe you in that setting. This may involve me disclosing your disability to your supervisor or coordinator and I will ask them to keep the information confidential. I will then write about how you act, especially how you start conversations with friends or co-workers or how you reply when a friend or co-worker talks to you. I will watch you four to seven times (4-7) for 30 minutes. Then, after two weeks, I will watch you again for four to seven times (4-7) for 30 minutes.

Even though there are no direct benefits from being in the study, your participation is very helpful.

Background Information:
The reason for this study is to learn about how young adults with disabilities start conversations with friends or co-workers or how they reply when a friend or co-worker talks to them. You are eligible for the study because you participate in Social Skills instruction with Dr. Solberg at Eaton & Associates in Minot. You also qualify because you are not a student of mine and cannot be a student of mine any time in the future.

Activities
To be clear about what your extra activities will be in this study, I will watch you at work, school, or doing community activities for four to seven (4-7) sessions of 30 minutes over two weeks. You will do what you normally do while I write down how you act. Then, after two weeks when I don't watch

your activities, I will watch and write down your actions again for four to seven (4-7) sessions of 30 minutes over two weeks.

Voluntary Nature of the Study

This study is voluntary. That means that you don't have to participate if you don't want to. It also means that even though you said you want to participate right away, if you don't want to at any later time, you can stop being in the study. Let's set up a safe word for you to say that tells me that you want to quit the study after you start.

My safe word is: _____

Risks and Benefits of Being in the Study:

Being in this study has some risks that you might experience in your regular activities like being tired, becoming frustrated, or getting uncomfortable. You might even feel singled out because you are the only person I'm watching and writing about. Being in the study will not make you unsafe physically. If you feel tired, frustrated, uncomfortable, or singled out, I will help you contact a parent/guardian, your case manager, or other support person. I will help you contact the person listed here.

My contact person is:_____

There are no identified benefits of being in the study.

Privacy:

Any information I learn will be kept confidential. I will not use any information including your personal information for anything outside of this study. I will not share your name or any other information in any reports that I write. I will write down information about how you act from a distance. I will sit in an out-of-the-way spot where I can see you to get this information.

I will write information on a data collection sheet on a clip board. The paper I write on will be covered by another piece of paper when I'm collecting data so no one else can see what I write. I will not talk to you while I'm watching you and writing down information about your actions. I will also look around the room so it looks like I'm watching the room, not just you.

Information I write down will be kept in a locked file cabinet at my house. When I get home with the paper information, I will put it into a computer program and put that on a travel drive with a username and password that no one else knows. You will have a secret name on all of the information. Then, I will put your real contact information on a different travel drive to keep your name safe. I have to keep your information stored safely for 5 years because the University I go to says I have to do so.

Contacts and questions:
You may ask any questions you have now. Or, if you have questions later, you can contact me on my phone (701.720.4928) or by email (janet.green@waldenu.edu). If you want to talk privately about your rights as part of this study, you can call Dr. Leilani Endicott. She is the Walden University person who can discuss your rights. Dr. Endicott makes sure I'm keeping you and your information safe. Her phone number is 612.312.1210. Walden University's approval number for this study is **06-03-14-0071216** and it expires on **February 10, 2015.**

I will give you a copy of this form to keep.

Statement of Consent:
I have read the information above and I think I understand the study well enough to make a decision about being part of the study. By signing below, I understand that I am agreeing to the terms described above.

Printed Name of Participant _____

Date of consent _____

Participant's Signature _____

Parent/Guardian Signature _____
(if appropriate)

Researcher's Signature _____

Appendix E: Confidentiality Agreement

CONFIDENTIALITY AGREEMENT

Name of Signer:

During the course of my activity in supporting a youth with an intellectual disability for this research: "*Using ~~Hand Held~~Hand-held Technologies to Support the Transition of Youth with Intellectual Disabilities into Adult Roles"* I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter, or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification, or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

_____ _____

Signature **Date**

Appendix F: Draft letter of Cooperation

To: Ms. Janet Green
Re: Study participant recruitment
Date: May 1, 2014

Dear Ms. Green,

I am pleased to work with you in carrying out activities for completion of your dissertation. Through existing social skills activities, I agree to allow you access to recruitment of your study's participants from the pool of youth with developmental disabilities who participate in Social Skills instruction with me at Eaton & Associates. I understand that you are targeting the skill of learning "to initiate interactions and respond to initiations of interactions by peers." This skill is taught through existing activities. You propose is to recruit three (3) individuals who have agreed to participate as "clients" to volunteer to participate in a research study on social interactions, specifically initiations of interactions and responses to initiations made by peers, of youth and young adults with disabilities. Instruction is available to all participants in Social Skills instruction at no cost to them. Only three youth will be participants in your study. I authorize you to collect baseline data before clients learn about initiating interactions through activities required as part of Social Skills instruction and treatment data after completion of the learning sessions. Individuals' participation will be voluntary and at their own discretion.

I understand that you will allow participants to volunteer and decline anonymously in order to minimize conflicts of interest and other potential ethical problems. I understand that our responsibilities include: provide a recruitment flyer to me to share with youth in my Social Skills instruction and teach social skills, specifically initiation of interactions and response to interactions made by peers in acceptable adult social roles as part of our established learning activities. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting. I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising faculty/staff without permission from the Walden University IRB.

Sincerely,

Mary Solberg, PhD
Eaton & Associates

Walden University policy on electronic signatures: An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically. Electronic signatures are regulated by the Uniform Electronic Transactions Act. Electronic signatures are only valid when the signer is either (a) the sender of the email, or (b) copied on the email containing the signed document. Legally an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. Walden University staff verify any electronic signatures that do not originate from a password-protected source (i.e., an email address officially on file with Walden).